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THE
ZOOLOGICAL RECORD

VOLUME THE THIRTY-SEVENTH.

BEING
RECORDS OF ZOOLOGICAL LITERATURE
RELATING CHIEFLY TO THE YEAR
1900.

BY J. A. THOMSON, R. LYDEKKER, R. BOWDLER SHARPE, G. A. BOULENGER,
W. A. HERDMAN, E. R. SYKES, E. A. SMITH, G. C. CRICK, A. WILLEY,
A. W. BROWN, D. SHARP, F. A. BATHER, AND E. A. MINCHIN.

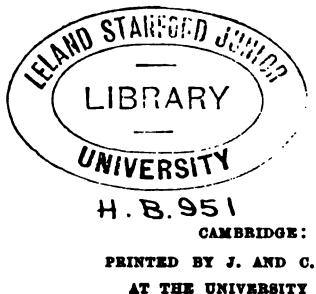
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Communications, Papers, and Memoirs intended for this work should be addressed to "THE EDITOR of the Zoological Record, Zoological Society, 3, Hanover Square, London, W." It is earnestly requested that in the case of separately-printed copies of papers so forwarded, the *original pagination* may be indicated.

The Editor thanks those Societies and individuals who have forwarded works and papers for the purposes of the Record, and suggests that Societies publishing Zoological Papers would much facilitate the work of the Recorders by forwarding a separate copy of each Zoological Memoir they publish to the Editor for the use of the Recorder. This is preferable to sending the entire volume, because each paper can go directly to the Recorder it concerns.



PREFACE.

THE thirty-seventh volume of the Zoological Record includes more matter than any of its predecessors ; the number of pages being about 180 more than were in the volume of last year. The index of new names amounts to 2102 entries ; the previous maximum for any year having been 1707, in 1895. Notwithstanding the increased work involved by this augmentation, the volume appears about the usual time, and the Editor feels correspondingly grateful to the Recorders, all of whom have been quite punctual in delivering their contributions. The list of abbreviations has again been thoroughly revised, Prof. E. A. Minchin having kindly given much assistance in this task.

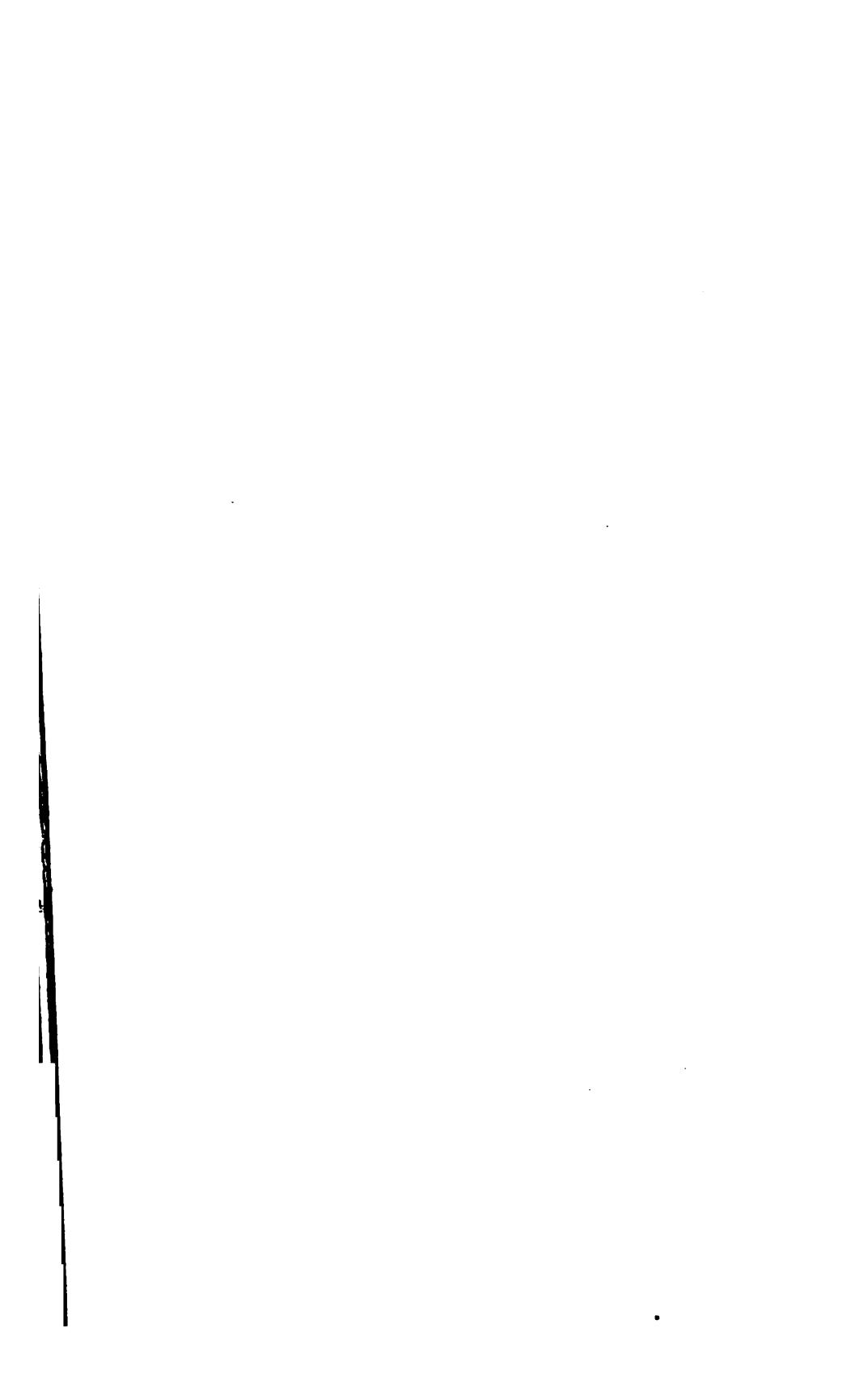
The Editor is also glad to take this opportunity of thanking the Librarians who have assisted him in keeping accurate the indications of the Libraries in which the various periodicals are to be found.

D. SHARP.

CAMBRIDGE,

October 25th, 1901.





ALPHABETICAL LIST
OF THE
ABBREVIATIONS
USED IN THE
ZOOLOGICAL RECORD, VOL. XXXVII, 1900,
FOR THE
TITLES OF THE JOURNALS, TRANSACTIONS, ETC.
THAT CONTAIN ZOOLOGICAL PAPERS;
WITH INDICATIONS OF SOME OF THE PRINCIPAL
LIBRARIES
IN WHICH THE BOOKS ARE CURRENT.

THE primary object of this list is to enable those using the Record to find with ease the full title of a Journal they see quoted in an abbreviated form. The arrangement is therefore a simple alphabetical list of the abbreviations, uncomplicated by syllabic or verbal limitations.

The list has also to serve the Recorders and others as a list of Journals, and for this purpose it is important that it should be fairly complete as regards current periodicals. In order to increase the utility of the list, the abbreviations have been made on a uniform system; but a few exceptions have, in practice, been found necessary. The chief points that have been kept in view in constructing the abbreviations may be briefly stated as follows:—

The words selected as distinctive in each title are reduced in most cases to three or four.

A distinct abbreviation is used for each different word, and the same abbreviation for the same word is used throughout the list.

Accents are omitted. As a rule the first word of the title is represented by an abbreviation, but this rule is departed from in the case of articles and prepositions, and occasionally in the case of adjectives that are useless for distinctive purposes. Thus "Annual Report" becomes "Rep.," and "Occasional Papers" becomes "Pap." Such adjectives as "New" and "Royal" are omitted, except when necessary for distinctive or other purposes.

The consecutive order of the words of the title is maintained in the abbreviation, except in a few cases where the arrangement of the words in the title is very unusual or faulty.

As an example of the form of abbreviation that is aimed at, we may take Bull. Soc. Moscou. The name of the locality is given at greater length than the more frequently used portions of the abbreviation.

After the titles, the place of publication is given, and this is followed by letters indicating some of the principal libraries in which the works may be consulted. The explanation of these letters is as follows:—

- N. = British Museum Natural History: general library.
- Nz. = " " library, zoological department.
- Ng. = " " geological "
- K. = Science library; South Kensington Museum.
- R. = Royal Society library.
- Z. = Zoological Society library.
- L. = Linnean
- C. = Cambridge University library.
- C, p or (C) p = Cambridge Philosophical Society library.
- b, or g, or y, after C, or (C) = Cambridge Balfour, or Woodwardian Museum, or Physiological libraries respectively.
- O. = Radcliffe library, Oxford.
- § is prefixed to titles added since the last list, and to changes of titles when important.

abeille—L'Abeille: Journal d'entomologie publié par la Société entomologique de France. (Paris, 8vo.) Nz. C.

Abh. Ak. Berlin—Abhandlungen der königlichen Akademie der Wissenschaften zu Berlin. (Berlin, 4to.) N. K. R. Z. L. C, p. O.

Abh. Bayer. Ak.—Abhandlungen der mathematisch-physikalischen Classe der königlichen Bayerischen Akademie der Wissenschaften. (München, 4to.) N. K. R. Z. L. C, p. O.

Abh. Bohemisch. Ges.—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmisches Gesellschaft. [Called also] Rozpravy tridy matematicko-přírodněké královské Ceske společnosti Nauk. (Prag, 4to.) N. K. R. L. C, p.

Abh. deutsch. Seefisch.-Ver.—Abhandlungen des deutschen Seefischerei-Vereins. (Berlin, 4to.) Nz. C.

Abh. geol. Karte Elsass—Abhandlungen zur geologischen Spezial-Karte von Elsass-Lothringen. (Strassburg, 8vo.) Ng.

Abh. geol. Landesanst. Darmstadt—Abhandlungen der grossherzoglich Hessischen geologischen Landesanstalt zu Darmstadt. (Darmstadt, 8vo.) Ng.

Abh. geol. Reichsanst.—Abhandlungen der Kaiserlich-Königlichen geologischen Reichsanstalt. (Vienna, 4to.) Ng. R. L. C, p.

Abh. Ges. Görlitz—Abhandlungen der naturforschenden Gesellschaft zu Görlitz. (Görlitz, 8vo.) N. K. R.

Abh. Ges. Götting.—Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-Physikalische Klasse. Neue Folge. (Göttingen, 4to.) N. R. Z. L. C, p. O.

Abh. Ges. Halle—Abhandlungen der naturforschenden Gesellschaft zu Halle. (Halle, 4to.) N. K. R. Z. L. C. O.

Abh. Ges. Isis—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (Dresden, 8vo.) N. K. Z. C.

Abh. Ges. Königsb.—[Part of *Schr. Ges. Königsb.*, q.v.]

- Abh. Ges. Nürnberg*—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (Nürnberg, 8vo.) N. K. C.
- Abh. Ges. Wien*—[Part of *Verh. Ges. Wien*, q.v.]
- Abh. Hamburg. Anst.*—[Part of *Jahrb. Hamburg. Anst.*, q.v.]
- Abh. Mus. Dresden*—Abhandlungen und Berichte des königlichen zoologischen und anthropologisch-ethnographischen Museums zu Dreden. (Berlin, 4to.) N. Z. C.
- Abh. Preuss. geol. Landesanst.*—Abhandlungen der königlich Preussischen geologischen Landesanstalt (Neue Folge). [Formerly *Abh. geol. Specialkarte von Preussen und den Thüringischen Staaten.*] (Berlin, 8vo.) Ng. K. C.
- Abh. Sachs. Ges.*—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften. (Leipzig, 4to.) N. K. R. C, p.
- Abh. Schweiz. pal. Ges.*—Abhandlungen der Schweizerischen paläontologischen Gesellschaft. Mémoires de la Société Paléontologique suisse. (Basel, &c., 4to.) Ng. R. Z. (C) g. O.
- Abh. Senckenb. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft. (Frankfort a.-M., 4to.) N. K. R. Z. L. C. O.
- Abh. Ver. Bremen*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen. (Bremen, 8vo.) N. K. R. Z. L. C.
- Abh. Ver. Hamburg*—Abhandlungen aus dem Gebiete de Naturwissenschaften herausgegeben vom naturwissenschaftlichen Verein in Hamburg. (Hamburg, 4to.) N. K. R. Z. L. C. b.
- Abh. Ver. Karlsruhe*—[Vide *Verh. Ver. Karlsruhe.*]
- Abh. Ver. Kassel*—[Issued with *Ber. Ver. Kassel*, q.v.]
- Abh. Ver. Lotos*—Abhandlungen des deutschen naturwissenschaftlich-medicinischen Vereines für Böhmen “Lotos.” (Prag, 4to.) N. C.
- Acta Ac. German.*—N. Acta Academie Cesareae Leopoldino-Carolinæ Germanicæ naturæ curiosorum. [Called also] Verhandlungen der k. Leop.-Carol. deutschen Akademie der Naturforscher. (Halle, 4to.) N. K. R. Z. L. C, p. O.
- Act. Ac. Cordoba*—Actas de la Academia nacional de Ciencias en Córdoba. (Buenos Aires, 4to.) N. R. Z. L.
- Acta Soc. Faun. Fenn.*—Acta Societatis pro Fauna et Flora Fennica. (Helsingfors, 8vo.) N. R. L.
- Acta Soc. Lund.*—Acta regiæ Societatis physiographicæ Lundensis. [Published as part of *Acta Univ. Lund.*, q.v.]
- Acta Soc. Sci. Fenn.*—Acta Societatis Scientiarum Fennicæ. (Helsingfors, 4to.) N. K. R. Z. (C) p.
- Acta Soc. Upal.*—Nova Acta regiæ Societatis Scientiarum Upsaliensis. (Upsala, 4to.) N. K. R. Z. L. C, p.
- Acta Univ. Lund.*—Acta Universitatis Lundensis. [Called also] Lunds Universitets Årsskrift, [and includes] Acta regiæ Societatis physiographicæ Lundensis, [also called] Kongl. fysiografiska Sällskapets i Lund Handlingar. (Lund, 4to.) N. K. R. L. C, p.
- Act. Soc. Bordeaux*—Actes de la Société Linnéenne de Bordeaux. (Bordeaux, 8vo.) N. Z. C.
- Act. Soc. Chili*—Actes de la Société scientifique du Chili. (Santiago, 4to.) R. Z.

- Act. Soc. Espan.*—Actas de la Sociedad española de historia natural. (Madrid, 8vo.) N. R. Z. C.
- Act. Soc. Helv.*—Actes de la Société Helvétique des Sciences naturelles. [Called also] Verhandlungen der schweizerischen naturforschenden Gesellschaft. (Basel, &c., 8vo.) N. K. R. L. C. O.
- Afh. Mus. Lund.*—E Museo Lundii. En Samling af Afhandlinger. (Kjobhnavn, 8vo.) N. R. Z. L.
- Agric. Gaz. N. S. W.*—The Agricultural Gazette of New South Wales. (Sydney, 8vo.) Nz. R.
- § *Allg. Zeitschr. Ent.*—Allgemeine Zeitschrift für Entomologie. Organ der “Allgemeinen entomologischen Gesellschaft.” (Neudamm, 8vo.) [Formerly called *Illustr. Zeitschr. Ent.*]
- Amer. Geol.*—The American Geologist, a Monthly Journal of Geology and allied Sciences. (Minneapolis, 8vo.) Ng. K. O.
- § *Amer. J. Physiol.*—The American Journal of Physiology. (Boston, 8vo.) N. K. R. (C) y. O.
- Amer. J. Sci.*—The American Journal of Science. (New Haven, 8vo.) N. K. R. Z. C, p. O.
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Z. (C) p, y. O.
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tut Impérial de Médecine expérimentale à St. Pétersbourg. (St.
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- Avicula*—Avicula, Giornale ornitologico italiano. (Siena, 8vo.) Nz.
- Avicult. Mag.*—The Avicultural Magazine, being the journal of the Avicultural Society for the study of foreign and British birds. (Brighton, 8vo.) Z.
- Beihft Hamburg Anst.*—[Vide *Mt. Mus. Hamburg*.]
- Beitr. Geol. Braunschweig*—Beiträge zur Geologie und Paläontologie des Herzogthums Braunschweig und der angrenzenden Landestheile, herausgegeben im Auftrage des Herzoglichen Staats-Ministeriums von Herzoglicher Cammer, Direction der Bergwerke. (Braunschweig, 8vo.) Ng.
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- Ber. deutsch. ornith. Ges.*—Allgemeine deutsche ornithologische Gesellschaft zu Berlin. Bericht über die . . . Jahresversammlung. [Forms part of *J. Ornithol.*, q.v.]

- Ber. Ges. Berlin—Bericht der naturwissenschaftlichen Gesellschaft zu Berlin. Berlin, Januar, 1871. 2 vols.

Ber. Ges. Bonn—Bericht der naturwissenschaftlichen Gesellschaft zu Bonn. Bonn, Januar, 1871. 2 vols.

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Berlin, acc. Zentral—Berichterstattungsschreiber Zeitschriften, herausgegeben von dem zentralstaatlichen Bureau zu Berlin. Berlin, Jan., 1871. 2 vols.

Ber. Phys. Institut—Tite 814. Phys. Institut.

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- Bibl. universelle*—Bibliothèque universelle. [Vide *Arch. Sci. Nat.*] N. R. Z. (C) p.
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- Verh. Ver. Hamburg Unterh.*—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg. (Hamburg, 8vo.) N. Z. L. C.
- Verh. Ver. Heidelberg*—Verhandlungen des naturhistorisch-medicinischen Vereins zu Heidelberg. Neue Folge. (Heidelberg, 8vo.) N. R. L. C. p.
- Verh. Ver. Karlsruhe*—Verhandlungen des naturwissenschaftlichen Vereins in Karlsruhe. [Consists of Sitzungsberichte and Abhandlungen.] (Karlsruhe, 8vo.) N.
- Verh. Ver. Presburg*—Verhandlungen des Vereins für Natur- und Heilkunde zu Presburg. [Called also] A Pozsonyi Természettudományi, és Orvosi Egyesület Közleményei. (Presburg, 8vo.) N. R.
- Verh. Ver. Rheinland*—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande, Westfalens und des Reg.-Bezirks Osnabrück. (Bonn, 8vo.) N. Z. L. C. O.
- Verh. Ver. Santiago*—Verhandlungen des Deutschen wissenschaftlichen Vereins zu Santiago (Chile). (Santiago, 8vo.) N. R. L. (C) p.
- Verh. Verh. Stockholm*—[Vide *Biol. Foren. Förf.*]
- Verd. Ak. Amsterdam*—Verslagen en Mededeelingen der k. Akademie van Wetenschappen. Afdeeling Natuurkunde. Derde Reeks. (Amsterdam, 8vo.) N. K. R. Z. L. C. p.
- § *Věstník České Ak.*—Věstník české akademie Císaře Františka Josefa pro vědy, slovesnost a umění. (Praze, 8vo.) N.
- Věstník České. Nauk.*—[Vide *SB. Bohmisch. Ges.*]
- Victorian Natural.*—The Victorian Naturalist: the Journal and Magazine of the Field Naturalists' Club of Victoria. (Melbourne, 8vo.) N. Z. C. O.
- Vid. Medd.*—Videnskabelige Meddelelser fra den naturhistoriske Forening i Kjøbenhavn. (Copenhagen, 8vo.) N. R. Z. C.

LIST OF ABBREVIATIONS.

lvii

- Vierteljahrsschr. Ges. Zurich*—Vierteljahrsschrift der naturforschenden Gesellschaft in Zürich. (Zürich, 8vo.) N. R. Z. L. C, b. p.
- Vjest. est. S. Peterb.*—Vjestnik estestvoznanija Izdanie S. Peterburghskago obshchestva estestvoispitatelyel. [Called also] Revue des Sciences publiée par la Société des Naturalistes à St. Petersbourg. [St. Petersburg, 8vo.] N.
- W. Amer. Scient.*—The West American Scientist. (Los Angeles, &c., 8vo.) N.
- West Ind. Bull.*—West Indian Bulletin, the journal of the Imperial Agricultural Department for the West Indies. (Barbados, 8vo.) N. Z.
- Wien. ent. Zeit.*—Wiener entomologische Zeitung. (Wien, 8vo.) Nz. Z. L. C.
- Wiltshire Mag.*—The Wiltshire Archaeological and Natural History Magazine. (Devizes, 8vo.) N.
- Wiss. Meeresuntersuch.*—Wissenschaftliche Meeresuntersuchungen herausgegeben von der Kommission zur wissenschaftlichen Untersuchung der deutschen Meere in Kiel und der biologischen Anstalt auf Helgoland. Neue Folge. (Kiel and Leipzig, 4to.) Nz. R. Z. L. C. O.
- Wiss. Mitt. Bosnien*—Wissenschaftliche Mittheilungen aus Bosnien und der Hercegovina. Herausgegeben vom Bosnisch-Hercegovinischen Landesmuseum in Sarajevo. (Vienna, 8vo.) N. Z.
- Yearb. U. S. Dep. Agric.*—Yearbook of the United States department of Agriculture. (Washington, 8vo.) N. R. Z. L. (C) b, p. O.
- § *Yn Lioar Manninagh*.—[Vide *J. Isle Man Soc.*]
- Zapiski imp. ak. nauk.*—[Vide *Mem. Ac. St. Petersb.*]
- Zapiski Kiev. Obshch.*—Zapiski Kievskago Obshchestva estestvoispitatelyel. [Called also] Mémoires de la Société des Naturalistes de Kiew. (Kiew, 8vo.) N. R. (C) p.
- Zapiski Kharkov. Univ.*—[Vide *Ann. Univ. Kharkow.*]
- Zapiski Novoross. Obshch.*—Zapiski Novorossiskagho Obshchestva estestvoispitatelyel. (Odessa, 8vo.) N. R. (C) p.
- Zeitschr. ang. Mikr.*—Zeitschrift für angewandte Mikroskopie herausgegeben von G. Marpmann. (Leipzig, 8vo.) N.
- Zeitschr. Biol.*—Zeitschrift für Biologie. (München und Leipzig, 8vo.) K. R. C, y. O.
- Zeitschr. Deutsch. geol. Ges.*—Zeitschrift der deutschen geologischen Gesellschaft. (Berlin, 8vo.) Ng. K. C. O.
- Zeitschr. Ent. Breslau*—Zeitschrift für Entomologie, herausgegeben vom Verein für Schlesische Insektenkunde zu Breslau. (Breslau, 8vo.) Nz.
- Zeitschr. Ethnol.*—Zeitschrift für Ethnologie. Organ der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte. (Berlin, 8vo.) C. O.
- Zeitschr. Ferd. Tirol*—Zeitschrift des Ferdinandeums für Tirol und Vorarlberg. (Innsbruck, 8vo.) N. R.

- § Zeitschr. Hym. Dipt.*—Zeitschrift für systematische Hymenopterologie und Dipterologie. (Teschendorf, 8vo.) Nz. C.
- Zeitschr. Morphol.*—Zeitschrift für Morphologie und Anthropologie. (Stuttgart, 8vo.) N. K. R. C. O.
- Zeitschr. Naturw.*—Zeitschrift für Naturwissenschaften. Im Auftrage des naturwissenschaftlichen Vereins für Sachsen und Thüringen. (Leipzig, 8vo.) N. K. R. Z. C. O.
- Zeitschr. Ornith.*—Zeitschrift für Ornithologie und praktische Geflügelsucht, Organ des Verbandes der ornithologischen Vereine Pommerns. (Stettin, 8vo.) Nz. Z.
- Zeitschr. Sinnesorgane*—Zeitschrift für Psychologie und Physiologie der Sinnesorgane. (Hamburg und Leipzig, 8vo.) R. C. y. O.
- Zeitschr. wiss. Mikr.*—Zeitschrift für wissenschaftliche Mikroskopie und für mikroskopische Technik. (Braunschweig, 8vo.) N. K. R. Z. C. b. y. O.
- Zeitschr. wiss. Zool.*—Zeitschrift für wissenschaftliche Zoologie. (Leipzig, 8vo.) Nz. K. R. Z. L. C. b. p. O.
- Zool. Anz.*—Zoologischer Anzeiger, zugleich Organ der deutschen zoologischen Gesellschaft. (Leipzig, 8vo.) Nz. K. R. Z. L. C. b. O.
- Zool. Beitr.*—Zoologische Beiträge. (Breslau, 8vo.) Nz. K. Z. L. C. b. O.
- Zool. Centrbl.*—Zoologisches Centralblatt. (Leipzig, 8vo.) Nz. K. Z. (C) b. O.
- Zool. Garten*—Der Zoologische Garten. (Frankfurt-a.-M., 8vo.) Nz. Z. (C) p. O.
- Zool. Jahrb. Anat.*—Zoologische Jahrbücher. Abtheilung für Anatomie und Ontogenie der Thiere. (Jena, 8vo.) Nz. K. R. Z. L. C. b. O.
- Zool. Jahrb. Syst.*—Zoologische Jahrbücher. Abtheilung für Systematik, Geographie und Biologie der Thiere. (Jena, 8vo.) Nz. K. R. Z. L. C. b. O.
- Zool. Jahresber.*—Zoologischer Jahresbericht, herausgegeben von der zoologischen Station zu Neapel. (Berlin, 8vo.) N. K. R. Z. L. C. b. O.
- Zool. Mag. Tokyo*—The Zoological Magazine: organ of the Zoological Society of Tokyo. (Tokyo, 8vo.) Nz. Z.
- Zoologica*—Zoologica—Abhandlungen aus dem Gesamtgebiete der Zoologie. Herausgegeben von Dr Carl Chun [formerly *Bibl. Zool.*]. (Stuttgart, 4to.) Nz. K. Z. L. C. b. O.
- Zoologist*—The Zoologist: a Monthly Journal of Natural History. (London, 8vo.) Nz. K. Z. L. C. p. O.
- Zool. Rec.*—The Zoological Record. (London, 8vo.) N. Nz. K. R. Z. L. C. b. p. O.
- Zool. Res.*—Collectio brevium dissertationum novarumque investigationum ad universas zoologicas doctrinas spectantium. (Roma, 8vo.)
- Zool. Vortr.*—Zoologische Vorträge herausgegeben von William Marshall. (Leipzig, 8vo.) Nz. Z.

An asterisk prefixed to a quotation signifies that the Recorder has not seen the journal or work referred to.

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Gen. Sub. 1

THE ZOOLOGICAL RECORD

FOR 1900.

I. GENERAL SUBJECTS.*

BY

Prof. J. ARTHUR THOMSON, M.A.

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INTRODUCTION.

FOLLOWING the order of the subject-index we may first note the continuation of Bronn's "Thierreich" (97), and of "Das Tierreich" (644). Noteworthy among text-books are the co-operative treatise by LANKESTER and others (405, 406), EASTMAN's edition of Zittel's Palaeontology (760),

* It will be understood that papers recorded here may also be found under the various classes, II—xviii. They are included here because of their bearing on general questions which, if not obvious, will be made apparent in the Subject-Index.

and the last volume of the translation of KORSCHELT and HEIDER's Embryology of Invertebrates (396). The revised edition of PEARSON's "Grammar of Science" (541) may be mentioned as the most important among general essays, and the life of Huxley (350) as the most important historical contribution.

Concerning distribution, we may especially mention CHUN's "Deep-Sea" (133), the beginning of RÖMER & SCHAUDINN's Fauna Arctica (609), and BURCKHARDT's work on the zooplankton of Swiss lakes (107 & 108).

Among morphological contributions TRAQUAIR's address on the bearings of fossil ichthyology on the problem of evolution (697), HALLER's comparative study of Vertebrate brains (300), FÜRBRINGER's investigation of the pectoral apparatus (245), and RÖRIG's laws on antler-evolution (610), are representative of the highest standard of work. The third volume of OPPEL's great treatise on the comparative histology of Vertebrates (625), the translation of the work of EHRLICH and LAZARUS on the blood (199), HIS's study in histogenesis (337), and the separate publication of RABL's comparative histology of the lens (579), may illustrate the year's progress in minute anatomy.

From among many physiological contributions of importance we may select WALLER's "Last sign of life" (729), BEARD's "True function of the thymus" (53), JENNINGS' studies on the Protozoa (360-365), LOEB's investigations on the rôle of ion-proteid compounds in vital phenomena (427), the study of colour-change in *Hippolyte varians* by GAMBLE and KEEBLE (253, 375), the little book on orientation by BONNIER (77), and THORNDIKE's lectures on instinct and associative processes (688 A & 688 B). There are others equally important, but these are typical.

The objective study of protoplasm may be represented by the works of WILSON (745) and HEIDENHAIN (314); the speculative discussion of living matter by GIGLIO-TOS's book (276). REINKE's studies on cell-division (602 & 603) are outstanding among the year's contributions to the problem of mitosis.

BEARD's paper on the morphological continuity of the germ-cells in the skate (52), PAULCKE's study of the queen-bee's ovary (538), and the investigations of spermatogenesis by EISEN (206 & 207), LOISEL (438-444), and REGAUD (589-599), may represent the papers cited under section 6; but greater interest perhaps attaches to the experiments and discussions on "artificial parthenogenesis," notably those of LOEB (429-432).

WILSON contributes a fine essay on modern problems of development (745 A) and a revised edition of his invaluable text-book "The cell in development and inheritance" (745): KEIBEL continues his "norm-tables" (376); FÉRÉ adds to his curious experiments on eggs (223-227); and there are valuable experimental studies by LOISEL (445-447), DRIESCH (182 & 183), HERST (319), SCHIMKEWITSCH (633 & 634), BATAILLON (40-46).

Regarding reproduction and sex, the studies on nematodes by MAUPAS (476) are undoubtedly the most remarkable contributions of the year. Also of great importance is the study of the sexual season in mammals by HEAPE (312). Mention should also be made of CUNNINGHAM's book on sexual dimorphism (150), CUÉXON's discussion of the determination of sex (149), and RÖRIG's study of antlers (611). Among a multitude of studies on regeneration, those of MORGAN (506-511 A), TORNIER (694), and PRZIBRAM (569) seem most important.

As to heredity, we may direct particular attention to PEARSON's discussion of reversion (543), HAMILTON's address on heredity and disease (302), SOMMER's criticism of BROWN-SÉGARD's experiments on epilepsy in guinea-pigs (664). There is at once historical and personal interest in VIRCHOW's lecture on the continuity of life as the foundation of the modern biological outlook.

Evolutionary literature may be illustrated by a variety of types:—

TITLES.

Gen. Sub. 3

TRAQUAIR's address (697), VERNON's & WARREN's studies on reaction to environment (707 & 732), DE VRIES's mutation-theory (722), HAECKER's Song of Birds (299), CUNNINGHAM's Sexual Dimorphism (150), EIGENMANN's studies on cave animals (200-205), PLATE's discussion of the selection principle (556) and PEARSON's continuation of his data for the problem of evolution in man (542).

I.—LIST OF TITLES.*

1. ABELSDORFF, G. Zur Erforschung des Helligkeits- und Farbensinnes bei Menschen und Tieren. Verh. physiol. Ges. Berlin in Arch. Physiol. 1900, pp. 561 & 562.
ABRAHAM, K. [See KEIBEL, F. (376).]
2. ABSOLON, K. Einige Bemerkungen über mährische Höhlenfauna. Zool. Anz. xxiii, pp. 1-6, 57-60, 189-195.
3. ACLOQUE, A. Faune de France, contenant la description des espèces indigènes, disposées en tableaux analytiques, et illustrées de figures représentant les types caractéristiques des genres. T. I. Vertebrata. 18mo, Paris, 556 pp., 1124 figg.
4. *—. Sous le microscope. 8vo, Paris, 320 pp., 320 figg.
5. *—. Le monde sous-marin. 8vo, Abbeville, 319 pp., 236 figg.
6. ADAMKIEWICZ, A. Zum Blutgefäßapparat der Ganglienzelle. Anat. Anz. xvii, pp. 44-48.
7. ADAMS, C. C. Variation in *Io*. P. Amer. Ass. xlix, pp. 208-225, 27 pls.
8. *AFLALO, F. G. A walk through the Zoological Gardens. 8vo, London, 232 pp.
9. AGASSIZ, A. Cruise of the Albatross. Science xi (II) pp. 92-98, (III) pp. 288-292, (IV) pp. 574-578.
10. AICHEL, O. Vergleichende Entwicklungsgechichte und Stammesgeschichte der Nebennieren. Ueber ein neues normales Organ des Menschen und der Säugetiere. Arch. mikr. Anat. lvi, pp. 1-80, 3 pls. & 1 fig.
11. ALBRECHT, E. Die Ueberwindung des Mechanismus in der Biologie. Biol. Centrbl. xxi, pp. 97-111.
12. *ALESSI, C. Rapporti somatici nella scala zoologica. Avola, 63 pp.
13. ALLBUTT, CLIFFORD. Historical aspects of the discovery of the circulation of the blood. Nature lxii, pp. 630-632.
Abstract of Harveian Oration.
14. AMBERG, C. Beiträge zur Biologie des Katzenscos. Inaug. Dissert. Vierteljahrsschr. Ges. Zurich xlv, pp. 59-136, 8 figg., 6 tables.
- 14a. AMBERG, O. Die von Schröter-Amberg modifizierte Sedgwick-Rafter'sche Methode der Planktonzählung. Biol. Centrbl. xx, pp. 283-288.

* An asterisk prefixed to a quotation indicates throughout the volume that the Recorder has not seen the Journal or Work referred to.

4 Gen. Sub.

I. GENERAL SUBJECTS.

15. *AMMON, O. Zur Theorie der reinen Rassetypen. *Zeitschr. Morphol.* ii, pp. 679-685.
16. ANDRES, ANGELO. La misurazione razionali degli organismi col metodo dei millesimi somatici or millesomi (somatometria). *Rend. Ist. Lombardo* xxxiii, pp. 398-429.
17. ANDREWS, C. W. A monograph of Christmas Island (Indian Ocean); Physical features and geology. By C. W. Andrews. With descriptions of the Fauna and Flora by numerous contributors. London, xi+337 pp., 21 pls., map.
18. C. W. ANDREWS, E. A. SMITH, H. M. BERNARD, R. KIRKPATRICK, & F. C. CHAPMAN. On the marine fauna of Christmas Island. *P. Z. S.* 1900, pp. 115-141, 2 pls.
ANGUS, H. F. [See HOLLBORN & ANGUS (340).]
19. ARAPOW, A. B. Contribution à l'étude des cellules hépatiques binucleaires. *Arch. Sci. Biol.* viii, pp. 184-209.
20. ARNOLD, J. Siderofere Zellen und die "Granulalehre." *Anat. Anz.* xvii, pp. 346-354.
21. —. "Fettkörnchenzellen" und "Granulalehre." *Anat. Anz.* xviii, pp. 385-391.
22. AURIVILLIUS, C. W. S. Animalische Plankton aus dem Meere zwischen Jan-Mayen—Spitzbergen—K. Karls Land und der Nordküste Norwegens. *Svenska Ak. Handl.* xxxii, 71 pp.
23. AVEBURY, LORD. Huxley's Life and Work : First "Huxley Memorial Lecture." *Nature* lxiii, pp. 92-96, 116-119.
24. BACHMANN, Ha. Die Planktonfänge mittels der Pumpe. *Biol. Centrbl.* xx, pp. 386-400, 1 fig.
25. *BÄCHLER, E. Die schützenden Farben und Formen im Thierreich. (Mimikry). *Ber. St. Gall. Ges.* 1898-99 (published 1900), pp. 149-153.
26. *BALLION, P. La mort chez les animaux (Zoopsychologie et Zoéthique). *Bazas*, 76 pp.
27. BALLOWITZ, E. Notiz über Riesenkerne. *Anat. Anz.* xvii, pp. 340-346, 4 figg.
28. —. Eine Bemerkung zu dem von Golgi und seinen Schülern beschriebenen "Apparato reticolare interno" der Ganglien- und Drüsenzellen. *Anat. Anz.* xviii, pp. 177-181.
29. —. Ueber das Epithel der Membrana elastica posterior des Auges, seine Kerne und eine merkwürdige Struktur seiner grossen Zellsphären. Ein Beitrag zur Kenntniss der Organisation der Zelle. *Arch. mikr. Anat.* lvi, pp. 230-291, 3 pls. and 49 figg.
30. *—. Kernmetamorphosen in der Hornhaut während ihres Wachstums und im Alter. *Graefe's Arch. Ophthalmol.* I, pp. 360-367, 11 microphotographs.
31. —. Ueber Kern-Arrosion und Kern-Fensterung unter dem Einflusse der Zellsphäre. *Arch. pathol.* clx, pp. 574-583, 2 pls.
32. BANCHI, A. Neotenia nel *Triton vulgaris* L. subsp. *meridionalis*. *Monit. Zool. Ital.* xi, pp. 194-200, 4 figg.
33. BARBIERI, N. A. Hétéroplastie. *C.R. Ac. Sci.* cxxx, pp. 1139-1141.

55. BRNDA, C. Weitere Beobachtungen über die Mitochondria und ihr Verhältniss zu Secret-granulationen, nebst kritischen Bemerkungen. *Verh. Physiol. Ges. Berlin in Arch. Physiol.* 1900, pp. 166–178.
- BENOIT, F. [See BRACHET & BENOIT (92).]
56. BERGEL, —. Beiträge zur Physiologie der Flimmerbewegung. *Arch. ges. Physiol.* lxxviii, pp. 441–465, 8 figg.
57. BERGH, R. S. Das Schicksal isolierter Furchungszellen. Zusammenfassende Uebersicht. *Zool. Centrbl.* vii, pp. 1–14.
58. BERNARD, H. M. Studies in the retina: rods and cones in the frog and in some other Amphibia. *Quart. J. Micr. Sci.* xlvi, pp. 23–47, 1 pl.
59. —. A suggested origin of the segmented worms, and the problem of metamerism. *Ann. Nat. Hist.* vi, pp. 509–520.
- BERNARD, M. [See KORSCHELT & HEIDER (396).]
60. BERNSTEIN, J. Chemotropische Bewegung eines Quecksilbertropfens. Zur Theorie der amöboïden Bewegung. *Arch. ges. Physiol.* lxxx, pp. 628–637, 3 figg.
61. *BERTACCHINI, P. Morfogenesi e teratogenesi negli Anfibi anuri (III. Serie Anomalie spontanea). *Int. J. Anat.* xvii, pp. 26–87, 1 pl.
62. *—. Intorno all' istogenesi dei nemaspermi di *Triton cristatus*. T. c. pp. 408–423, 1 pl.
63. BETHE, A. Einige Bemerkungen über die "intracellulären Kanälchen" der Spinalganglienzellen und die Frage der Ganglienzellen function. *Anat. Anz.* xvii, pp. 304–309, 3 figg.
64. BETHE, A. Noch einmal über die psychischen Qualitäten der Ameisen. *Arch. ges. Physiol.* lxxix, pp. 39–52.
65. —. Ueber die Neurofibrillen in den Ganglienzellen der Wirbeltiere und ihre Beziehungen zu den Golginetzen. *Arch. mikr. Anat.* lv, pp. 513–558, 3 pls.
66. BICKEL, A. Ueber einige Erfahrungen aus der vergleichenden Physiologie des Centralnervensystems der Wirbeltiere. Eine Erwiderung an J. Steiner. *Arch. ges. Physiol.* lxxxiii, pp. 155–171.
67. BIRGE, E. A. Some of the problems of limnology. *Science* xi, pp. 253–255.
68. *BLAKE, J. A. The roof and lateral recesses of the fourth ventricle, considered morphologically and embryologically. *J. Comp. Neurol.* x, pp. 79–108, 7 pls.
69. BLANCHARD, R. Alphonse Milne-Edwards (1835–1900). *Bull. Soc. zool. France* xxv, pp. 77–84, 1 pl.
- 69A. BLANFORD, W. T. The distribution of Vertebrate animals in India, Ceylon, and Burma. *P. R. Soc. London* lxvii, pp. 484–492.
70. BLAAUW, F. E. Notes on the Zoological Garden of Berlin. *P. Z. S.* 1900, pp. 299–306.
71. BODEMEYER, E. von. Quer durch Klein-Asien in den Bulghar-Dagh. *Emmendingen*, 8vo, v + 169 pp.
72. *BÖHM, A. & OPPEL, A. Taschenbuch der mikroskopischen Technik. Kurze Anleitung zur mikroskopischen Untersuchung der Gewebe und Organe der Wirbeltiere und des Menschen. Mit einem Beitrag (Reconstructionsmethode) von G. Born. 4 durchges. u. vermehrte Auflage. 8vo, München, vi + 240 pp.

73. *BOHR, CHR. & HASSELBALCH, K. Ueber die Kohlensäureproduktion des Hühnerembryos. Skandinav. Arch. Physiol. x, pp. 149-173.
Summary by W. A. NAGEL, Zool. Centrbl. vii, p. 537.
74. BOKORNY, TH. Physiologisches und Chemisches über die Peptongbildung aus Eiweiss. Biol. Centrbl. xx, pp. 53-59.
75. BONMARIAGE, A. & PETRUCCI, R. Sur la loi d'affinité du soi pour soi ou loi de l'association cellulaire. J. Anat. Physiol. xxxvi, pp. 186-209, 1 fig., 291-322, 5 figg., 417-437, 5 figg.
76. BONNET, R. Giebt es bei Wirbeltieren Parthenogenese? Anat. Hefte Ergebn. (for 1899) ix, pp. 820-870.
77. BONNIER, P. L'orientation. Series Scientia, 8vo, Paris, pp. 90, 16 figg.
78. —. L'espace idéal et la théorie de M. de Cyon. C.R. Soc. Biol. lii, pp. 134-137.
79. BORDAGE, E. On the absence of regeneration in the posterior limbs of the Orthoptera saltatoria and its probable causes. Ann. Nat. Hist. v, pp. 234-236.
Translation from C.R. Ac. Sci. Paris cxxix, pp. 120-123.
80. —. Regeneration of the tarsus and of the two anterior pairs of limbs in the Orthoptera saltatoria. T. c. pp. 237-239.
Transl. from C.R. Ac. Sci. cxxix, pp. 169-171.
81. —. On the spiral growth of appendages in course of regeneration in Arthropoda. T. c. pp. 314-316.
Transl. from C.R. Ac. Sci. cxxix, pp. 455-457.
82. —. On the special protection of appendages in process of regeneration after artificial mutilation among insects. T. c. pp. 501-503.
Transl. from C.R. Ac. Sci. cxxix (1899), pp. 501-504.
83. BORGERT, A. Untersuchungen über die Fortpflanzung der tripyleen Radiolarien, speciell von *Aulacantha scolymantha* H. Zool. Jahrb. xiv, pp. 203-276, 5 pls. and 33 figg.
BORN, G. [See BÖHM & OPPEL (72).]
84. BOE, J. RITZEMA. Agricultural Zoology. Trans. by J. R. Ainsworth Davis, Introduction by E. A. Ormerod. 2nd Ed. 8vo, London, 332 pp., 155 figg.
85. BOUIN, M. Histogenèse de la glande génitale femelle chez *Rana temporaria* L. Arch. Biol. xvii, pp. 201-381, 4 pls.
86. *—. Ébauche génitale primordiale chez *Rana temporaria* L. Note préliminaire. Bibliog. anat. viii, pp. 103-108.
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b. *Histology.*

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Bütschli's work on the structure of coagulable substances ; SCHUBERG (643).

4. PHYSIOLOGICAL.

a. General.

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b. Particular Functions.

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d. *Nervous and Sensory: Comparative Psychology.*

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5. PROTOPLASM AND THE CELL.

a. *Protoplasm.*

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b. *Cell, Structure and Function.*

Revised edition of “The Cell in development and in inheritance”; WILSON, E. B. (745).—Structure of the cell; HEIDENHAIN (314).—Organisation of the cell; BALLOWITZ (29).—Cell-studies; NIESSING (519), PROWAZEK (565).—Role of the ergastoplasm; GARNIER (255).—Structure of the living cell; SJÖRING (660).—“Spécificité” and transformation of cells; RETTERER (605).—Evolution of the animal cell; SMITH (661).

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c. *Nucleus, Nucleolus, Centrosome, etc.*

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6. OOGENESIS, SPERMATOGENESIS, MATURATION, FERTILISATION.

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7. EMBRYOLOGICAL.

a. General.

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8. REPRODUCTION (incl. REGENERATION), SEX, and HEREDITY.

a. *Reproduction and Sex.*

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II. MAMMALIA.

BY

R. LYDEKKER.

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INTRODUCTION.

THE number of papers recorded for 1900 somewhat exceeds those enumerated in 1899; that list being in excess of the one for the previous year.

From a systematic and phylogenetic point of view, perhaps the two most important papers of the year are DOLLO's arboreal ancestry of Marsupials and OSBORN's researches on the extinct Rhinoceroses of Europe and North America. The last-named writer has also devoted a special contribution to the origin of Mammals, as deduced from the occipital condyles; and KINGSLEY contributes to the same subject from the standpoint of the auditory ossicles.

Much attention continues to be devoted to the Marsupials and Monotremes, HILL furnishing another contribution to the study of the generative organs of the former, while EGGLING treats of the dermal glands, and EMERY of the carpus and tarsus of the latter. The comparatively fresh subject of the arrangement of the papillary ridges on the palm and sole of the Primates has received attention from FÉRÉ, and also from the Recorder.

Among anatomical papers, special mention may be made of KLAATSCH's researches on the femoral muscles, of TANDLER's investigations of the cephalic arteries, and of LÖNNBERG's dissection of the Musk-Ox. PAULLI continues his researches on the pneumaticity of the skull; and STEHLIN has brought to a close his important investigations on the dentition and distribution of the Pigs.

W. L. SCLATER's work on the Mammals of South Africa is a valuable contribution to the faunistic history of that continent; while OSBORN's theory as to the origin of that fauna opens up new, not to say revolutionary, ideas.

Messrs SCLATER and THOMAS have brought to a conclusion the "Book of Antelopes," and many papers have been contributed, for the most part by well-known names, to the never-ending work of species-making. It is notable in this connection that American writers are devoting more and more of their attention to the Mammals of the Old World.

Palaontology has been singularly barren during the year, so far as Mammals are concerned, nothing of any special interest having been described.

I. TITLES.*

1. ALLEN, J. A. The North American Jumping Mice. Amer. Natural. xxiv, pp. 199-202. [*Dipodidae*.]
2. —. Descriptions of new American Marsupials. Bull. Amer. Mus. xiii, pp. 191-199. [*Marsupialia*.]
3. —. On Mammals collected in South-eastern Peru by Mr H. H. Keays, with descriptions of new species. T. c. pp. 219-227. [*Rodentia*.]
4. —. The systematic name of the Cuban Red Bat. P. Washington Soc. xiii, p. 165. [*Chiroptera*.]
5. —. The proper name of the Viscacha. T. c. pp. 183 & 184. [*Octodontidae*.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

6. ALMERA, J. Sobre las especies *Acerotherium lemanense*, *Mastodon longirostris*, y un *Elephas* descubiertos en esta provincia de Barcelona. Bol. Ac. Barcelona (3) i, pp. 535-537. [*Proboscidea*.]
7. AMEGHINO, F. Mamíferos del cretáceo inferior de Patagonia (Formación de las areniscas abigarradas). Comun. Mus. Buenos Aires i, pp. 197-206, figg. [*Ungulata, Marsupialia*.]
8. —. Presencia de Mamíferos Diprotodontes en los depósitos terciarios del Paraná. An. Soc. Argent. xlix, pp. 235-240, figg. [*Marsupialia*.]
9. ANDERSON, R. J. The dentition of the Seal. Rep. Brit. Ass. 1900, pp. 790-792. [*Pinnipedia*.]
10. ANDREWS, C. W. A Monograph of Christmas Island (Indian Ocean). London, 8vo, pp. xv & 337, illustrated. Pp. 22-37 are devoted to the Mammals. [*Vespertilionidae* and *Muridae*.]
11. ARNBACK-CHRISTIE-LINDE, —. Zur Anatomie des Gehirnes niederer Säugetiere. Anat. Anz. xviii, pp. 8-16, figg.
12. ACERBACH, M. Die Unterkieferdrüsen von *Myoxus muscardinus*, Schreber. Rev. Suisse Zool. viii, pp. 45-53, pls. iv & v. [*Gliridae*.]
13. BÄCHLER, E. Beobachtungen am Siebenschläfer (*Myoxus glis*, L.). Ber. St. Gall. Ges. 1898-99, pp. 267-288. [*Gliridae*.]
14. BAILEY, V. Revision of American Voles of the genus *Microtus*. North Amer. Fauna, No. 17, 88 pp. 5 pls. [*Muridae*.]
15. BAKER, E. C. STUART. The Gaur and the Gayal. Asian, Feb. 20 and 27, pp. 528, 529, 556 & 559. [*Bovidae*.]
16. BANGS, O. A new Jack-Rabbit from Western Mexico. P. New England Zool. Club i, pp. 85 & 86. [*Leporidae*.]
17. —. List of the Mammals collected in the Santa Marta region of Colombia by W. W. Brown, Junr. T. c. pp. 87-102, pl. i. [*Muridae*.]
18. —. Description of a new Squirrel from Panama. Op. cit. ii, pp. 43 & 44. [*Sciuridae*.]
19. —. Three new Rodents from Southern Labrador. T. c. pp. 35-41. [*Muridae, Erethizontidae*.]
20. BARTLETT, A. D. & E. Bartlett's Life among Wild Beasts at the "Zoo." London, 1900, 8vo, pp. xviii & 373, illustrated.
21. BEDDARD, F. E. On the brain of a Siamang (*Hylobates syndactylus*). P. Zool. Soc. London 1900, pp. 187-190. [*Primates*.]
22. —. On the anatomy of *Bassaricyon alleni*. T. c. pp. 661-665. [*Procyonidae*.]
23. BEMMELEN, J. F. VAN. Ueber den Schädel der Monotremen. Zool. Anz. xxiii, pp. 449-461.
24. —. Further results of an investigation of the Monotreme skull. P. Ac. Amsterdam iii, pp. 130-132, & pl. [*Monotremata*.]
25. —. Third note concerning certain details of the Monotreme skull. T. c. pp. 405-407.
26. BERG, C. Notas sobre los nombres de algunos Mamíferos Sudamericanos. Comun. Mus. Buenos Aires i, pp. 219-222 & 200-203.
27. BERGE, R. Ueber das ehemalige Vorkommen der grösseren Raubsäugetiere in Sachsen. Zool. Garten xli, pp. 130-135.

28. BIGNOTTI, G. Sul tarso del *Mus documanus*. Monit. Zool. ital. xi, suppl. pp. 17-19. [*Muridae*.]
29. BILLARD, — & CAVALIÉ, —. Les branches hépatiques chez le Chien. C.R. Soc. Biol. lii, pp. 511-513. [*Canidae*.]
30. BÖEKH, H. *Orca semseyi*, eine neue *Orca*-Art aus dem unteren Miocän von Salgotrzan. Mt. Ungar. geol. Anstalt xiii, pp. 105-107, pl. xiii, 1899. [*Cetacea*.]
31. BOFILL, A. Sobre los restos de dos Mamíferos fosiles de Cataluña, existentes en el Museo Martorell de la ciudad de Barcelona. Bol. Ac. Barcelona (3) i, pp. 532-534.
32. BOLK, L. Beiträge zur Affen-Anatomie; I. Untersuchungen um schwangeren Uterus von *Semnopithecus*. Morphol. Jahrb. xxviii, pp. 564-623, pl. xxx. [*Primates*.]
33. BONHOTE, J. L. On Squirrels of the *Sciurus maclellandii* group. Ann. Nat. Hist. (7) v, pp. 50-54. [*Sciuridae*.]
34. —. On the Squirrels of the *Ratufa (Sciurus) bicolor* group. T. c. pp. 490-499. [*Sciuridae*.]
35. —. On a collection of Mammals from Siam made by Mr T. H. Lyle. P. Zool. Soc. London 1900, pp. 191-195, pl. xviii. [*Sciuridae*.]
36. —. On the Mammals collected during the "Skeat Expedition" to the Malay Peninsula 1899-1900. T. c. pp. 869-883, pl. lvi. [*Muridae*.]
37. BOUIN, P. & M. A propos du follicule de Graaf des Mammifères. C.R. Soc. Biol. lii, pp. 17 & 18.
38. BOULE, M. Observations sur quelques Équidés fossiles. Bull. Soc. geol. France xxvii, pp. 531-542. [*Perissodactyla*.]
39. BRANDT, A. Zur Phylogenie der Säugetierhaare. Biol. Centrbl. xx, pp. 572-592.
40. BRAUNER, A. Einige Bemerkungen über den Edelhirsch in der Krim. Zapiski Novoross. Obschch. 1900, pp. 1-14, pl. i. [*Cervidae*.]
- BRIVES, A. [See FICHEUR and BRIVES (68).]
41. BROOM, R. On the development and morphology of the Marsupial shoulder-girdle. Tr. R. Soc. Edinb. xxxix, pp. 749-770, pls. i & ii. [*Marsupalia*.]
42. BUTLER, A. L. On a new Serow from the Malay Peninsula. P. Zool. Soc. London 1900, pp. 675 & 676. [*Bovidae*.]
- CABRERA, A. [See LATORRE, A. CABRERA (120).]
43. CAPELLINI, G. Balenottere Mioceniche di San Micheli presso Cagliari. Mem. Ist. Bologna (5) vii, pp. 661-679, pls. i & ii. [*Cetacea*.]
44. —. Balenottera Miocenica della Repubblica di San Marino. Rend. Acc. Lincei (5) ix, pp. 233-236.
45. CARLSSON, A. Ueber die systematische Stellung der *Vandinia binotata*. Zool. Jahrb. Syst. xiii, pp. 509-528, pl. xxxvi. [*Viverridae*.]
- CAVALIÉ, —. [See BILLARD and CAVALIÉ (29).]
46. CEDERBLOM, E. Ueber den Zahnwechsel bei den Nagern. Zool. Jahressber. xiii, pp. 269-286. [*Rodentia*.]
47. CHAPMAN, H. C. Observations upon the anatomy of *Hylobates leuciscus* and *Chiromys madagascariensis*. P. Ac. Philad. 1900, pp. 414-423. [*Primates*.]

48. CLELAND, J. Duplicity of cervix uteri in *Trichechus* and *Otaria*. *J. Anat. Physiol. norin. path.* xxiv, pp. 159-162, pl. xxvii. [*Pinnipedia*.]
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50. COCKS, A. H. Note on the gestation of the Pine-Marten. *P. Zool. Soc. London* 1900, pp. 836 & 837. [*Mustelidae*.]
51. CUNNINGHAM, J. T. Sexual dimorphism in the Animal Kingdom. London, 8vo, pp. xi & 317. [*Phocidae*, *Cervidae*.]
52. DARMS, P. Der Biber in Westpreussen. *Zool. Garten* xli, pp. 87-93, 103-112, 214 & 215, figg. [*Castoridae*.]
53. DEMIDOFF, PRINCE E. After Wild Sheep in the Altai and Mongolia. London, 8vo, pp. xii & 324, illustrated. [*Bovidae*.]
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[†]*Megaladapis brachycephalus*, p. 8, *dubius*, p. 12, Pleistocene, Madagascar, LORENZ-LIBURNAU, Denk. Ak. Wien lxx, n. spp.; *insignis* [Zool. Rec.

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 †*Globilemur* = †*Nesopithecus*, F. MAJOR, P. Zool. Soc. London 1899, p. 988.
 †*Mesoudapis*, n. g. for *M. destructor*, n. sp., Pleistocene, Madagascar, LORENZ-LIBURNAU, t. c. p. 10; both the above identified by F. MAJOR, Geol. Mag. (4) vii, p. 493 with his *Megaladapis insignis*.
 †*Protoindris*, n. g. for *P. globiceps*, n. sp., Pleistocene, Madagascar, LORENZ-LIBURNAU, t. c. p. 11; = *Nesopithecus australis*, F. MAJOR, op. cit. p. 496.
 †*Hadropithecus*, n. g. for *H. stenognathus*, n. sp. Pleistocene, Madagascar, LORENZ-LIBURNAU, t. c. p. 2; see also F. MAJOR, op. cit. p. 499.
 †*Pithecodon*, n. g. for *P. sikorae*, n. sp., Pleistocene, Madagascar, LORENZ-LIBURNAU, t. c. p. 13.
Nycticebus tardigradus, its medicinal use among the Malays, RIDLEY, J. Straits Asiat. Soc. xxxiv, p. 31; (= *Stenops*), cranial bones, MAGGI, Rend. Ist. Lombardo (2) xxxiii, p. 688.
Chiromys madagascariensis, anatomy, CHAPMAN, P. Ac. Philad. 1900, p. 414.

II. CHIROPTERA.

Sense of direction, ROLLINAT & TROUESSART, C.R. Soc. Biol. 1900, p. 604; palatal ridges, SEABRA, J. Sci. Lisb. (2) vi, p. 76; anatomy of nose and throat, GROSSER, Morphol. Jahrb. xxix, p. 1; bats of Calvados, LETACQ, Bull. Soc. Rouen xxxv, p. 13, of Hungary, MEHELY (161); cranial bones, MAGGI, Rend. Ist. Lombardo (2) xxxiii, p. 298.

PTEROPODIDÆ.

- Pteropus lepidus*, Tambelan Ids., MILLER, P. Washington, Ac. ii, p. 237, n. sp.
Cephalotes aëlo, New Guinea, THOMAS, Ann. Nat. Hist. (7) v, p. 216, n. sp.

RHINOLOPHIDÆ and NYCTERIDÆ.

- Rhinolophus achilles*, Key Ids., THOMAS, Ann. Nat. Hist. (7) v, p. 145, *minutus*, Anambas Ids., MILLER, P. Washington Ac. ii, p. 236, n. spp.
Hipposideros barbensis, St Barbe Id., MILLER, t. c. p. 233, n. sp.
Megaderma gigas, Australia, a second specimen, WAITE, Rec. Austral. Mus. iii, p. 188.

VESPERTILIONIDÆ and NATALIDÆ.

- Vespertilio atacamensis*, Peru, p. 1, *capucinus*, Chili, p. 2, Philippi, An. Mus. Chile, No. 13 (1896), n. spp.
Myotis nesopolus, Curaçoa, MILLER, p. 123, *californicus pallidus*, California, STEPHENS, p. 153, P. Soc. Washington xiii, n. spp.; *Vespertilio concinnus*, H. Allen = *M. nigricans* (Maximilian), p. 155, *M. blythei*, note on p. 155, MILLER, t. c.
Vesperugo flavescens, pp. 23 & 113, *anchietæ*, pp. 26 & 120, Angola, SEABRA, J. Sci. Lisb. (2) vi, n. spp.
Pipistrellus murrayi, Christmas Id. ANDREWS, monograph of Christmas Island, p. 26; *minuscetus*, Liberia, MILLER, P. Washington Ac. ii, p. 647, n. spp.
Lasiurus pfeifferi (Grundlach, 1861) supersedes *L. blossevillei*, Gervais, ALLEN, P. Soc. Washington xiii, p. 165; see also REHN, t. c. p. 165; MILLER, t. c. p. 155, adopts the name *L. blossevillei*.

- Tomopeas*, n. g. p. 570, for *T. rarus*, Peru, p. 571, n. sp., MILLER, Ann. Nat. Hist. (7) vi.
- Cerivoula harrisoni*, N.E. Africa, THOMAS, P. Zool. Soc. London 1900, p. 802, n. sp.
- †*Palaeonycteris*(?) *reinachi*, Tertiary, Frankfurt a. M., KOBELT, Ber. Senckenberg. Ges. 1900, p. 155, n. sp.
- Pterygistes maximus*, the name for the larger form of the noctule, MILLER, P. Soc. Washington xiii, p. 156.
- Natalus tumidirostris*, Curaçoa, MILLER, op. cit. p. 160, n. sp.

EMBALLONURIDÆ and PHYLLOSTOMATIDÆ.

- Emballonura anambensis*, Anambas Ids., MILLER, P. Washington Ac. ii, p. 236, n. sp.
- Molossus pygmaeus*, Curaçoa, MILLER, P. Soc. Washington xiii, p. 162, n. sp.
- Promops nanus*, Central America, MILLER, Ann. Nat. Hist. (7) vi, p. 470; *affinis*, p. 91, *milleri*, p. 92, Colombia, ALLEN, Bull. Amer. Mus. xiii; n. spp.
- Mormopterus whitleyi*, Benin, W. Africa, SCHARFF, Ann. Nat. Hist. (7) vi, p. 569, n. sp.
- Nyctinomus anchietæ*, pp. 82 & 123, *brunneus*, pp. 83 & 125, *bocagei*, pp. 84 & 127, Angola, SEABRA, J. Sci. Lisb. (2) vi, n. spp.
- Mormoops intermedius*, Curaçoa, MILLER, P. Soc. Washington xiii, p. 160, n. sp.
- Glossophaga elongata*, Curaçoa, MILLER, op. cit. p. 124, n. sp.
- Monophyllus portoricensis*, Porto Rico, p. 34, *plethodon*, Barbados, p. 35, MILLER, op. cit. n. spp.
- Vampyrops dorealis*, Ecuador, THOMAS, Ann. Nat. Hist. (7) v, p. 269, n. sp.
- Chiroderma jesupi*, Colombia, ALLEN, Bull. Amer. Mus. xiii, p. 88, n. sp.
- Micronycteris brachyotis* (Dobson) and *M. microtis*, Miller, compared, MILLER, P. Soc. Washington xiii, p. 154; *hypoleuca*, Colombia, ALLEN, Bull. Amer. Mus. xiii, p. 90, n. sp.
- Leptonycteris curasaoe*, Curaçoa, MILLER, P. Soc. Washington xiii, p. 126, n. sp.

III. INSECTIVORA.

TUPAIIDÆ and MACROSCELIDIDÆ.

- Tupaia bunoæ*, Tambelan Ids., p. 229, *sordida*, Tioman Id., p. 231, *chrysomalla*, Anambas Ids., p. 232, MILLER, P. Washington Ac. ii, n. spp.
- Macroscelides boranus*, N.E. Africa, THOMAS, P. Zool. Soc. London 1900, p. 802, n. sp.
- Petrodonius matschiei*, E. Africa, NEUMANN, Zool. Jahrb. Syst. xiii, p. 540, n. sp.
- Rhynchocyon petersi usambaræ*, p. 542, *p. fischeri*, p. 543, E. Africa, NEUMANN, t. c. n. subspp.

TALPIDÆ and SORICIDÆ.

- Scalops aquaticus*, eye, SLONAKER, P. Indiana Ac. 1899, p. 146.
- Sorex intermedius*, Cornalia, a composite of *Sorex* and *Neomys*, SORDELLI, Atti Soc. Ital. xxxviii; *glacialis*, *tundrensis*, p. 16, *personatus arcticus*,

- p. 17, *alascensis shumaginensis*, *navigator alaskanus*, p. 18, Alaska, MERRIAM, P. Washington Ac. ii; *vulgaris nigra*, Switzerland, FATIO, Rev. Suisse Zool. viii, p. 470; n. spp. & subspp.
Crocidura bicolor sansibarica, Zanzibar, *flavescens nyanae*, Nyanza, *martenesi*, Kilimanjaro, NEUMANN, Zool. Jahrb. Syst. xiii, p. 544; *lignicolor*, E. Turkestan, MILLER, P. Washington Ac. ii, p. 39; n. spp. & subspp.
Myosorex muricauda, Liberia, MILLER, P. Washington Ac. ii, p. 645, n. sp.

ERINACEIDÆ and CENTETIDÆ.

- Erinaceus europaeus occidentalis*, p. 362, Scotland, *eu. hispanicus*, p. 363, Spain, *eu. italicus*, p. 364, Italy, *eu. roumanicus*, p. 365, Rumania, *eu. consolei*, p. 366, Sicily, B. HAMILTON, Ann. Nat. Hist. (7) v, n. subspp.; variation in *europaeus*, LÖNNBERG, t. c. p. 542, HAMILTON, ibid. vi, p. 243.
Microgale brevicauda, Madagascar, GRANDIDIER, Bull. Mus. Paris 1899, p. 349, n. sp.

IV. CARNIVORA.

FELIDÆ, HYÆNIDÆ and VIVERRIDÆ.

- Felis catus*, peritoneal epithelium, MILLER, Bull. Univ. Wisconsin ii, p. 235; coraco-olecranal muscle, McCCLURE, Anat. Anz. xvii, p. 357, venal abnormalities, Amer. Natural. xxiv, p. 185; *concolor*, cranial characters, DUGÉE, Mem. Soc. Ant. Alzate xiv, p. 361; *pardus panthera*, for the Persian leopard, LYDEKKER, Game of India, etc., p. 306; *leopardus suahelicus*, E. Africa, NEUMANN, Zool. Jahrb. Syst. xiii, p. 551; *leo somaliensis*, Somaliland, NOACK, Jahrb. Hamburg. Anst. ix, p. 48 (1891), *l. kampfzi*, Cameruns, MATSCHIE, SB. Ges. naturf. Berlin 1900, p. 98; *l. massaicus*, Masailand, NEUMANN, Zool. Jahrb. Syst. xiii, p. 550 : n. subspp.
Lynx canadensis mollipilosus, Alaska, STONE, P. Ac. Philad. 1900, p. 48, n. subsp.
Hyæna wiedmanni, Epukiro, p. 22, *gariepensis*, Orange river district, p. 25, *germinans*, Lake Rukwa, p. 26, *thierryi*, Togo, p. 30, *togoensis*, Togo, p. 31, *syriaca*, Syria, p. 54, *schillingi*, Kilimanjaro district, p. 55, *noltei*, Cameruns, p. 215, MATSCHIE, SB. Ges. naturf. Berlin 1900 : n. spp.
Nandinia binotata, its anatomy, systematic position, and affinity to *Amphictis*, CARLSSON, Zool. Jahrb. Syst. xiii, p. 509.

CANIDÆ and PROCYONIDÆ.

- Canis sechurae*, Peru, THOMAS, Ann. Nat. Hist. (7) v, p. 148; *cruusemanni*, Siam, MATSCHIE, SB. Ges. naturf. Berlin 1900, p. 145, n. spp. Hybrid fox and dog, POCOCK, Zoolologist (4) iv, p. 477; *familiaris*, hepatic blood-vessels, BILLARD & CAVALIÉ, C.R. Soc. Biol. lii, p. 511; evolution of tonsils, RETTERER, op. cit. p. 513.
Vulpes harrimani, Kadiak Id, p. 14, *hallensis*, Hall. Id, p. 15, *necator*, California, p. 664, *cascadensis*, Cascade Range, p. 665, *rubricosa bangsi*, Labrador, p. 667, *alascensis*, Alaska, p. 668, *alascensis*

- abietorum*, B. Columbia, p. 669, *regalis*, Minnesota, p. 672, MERRIAM, P. Washington Ac. ii : n. spp. & subspp.
Cyon tsardous, from Sardinian caves, note on, and relation of genus to *Lycaon*, F. MAJOR, P. Zool. Soc. London 1900, p. 833.
Procyon pallidus, California, MERRIAM, P. Soc. Washington xiii, p. 152, n. sp.
Bassaricyon alleni, anatomy, BEDDARD, P. Zool. Soc. London 1900, p. 661.

MUSTELIDÆ and URSIDÆ.

- Cynictis* and *Galictis*, together with *Mephitis*, separated from their respective families, on account of the structure of the eye, and grouped as *Cynictidae*, JOHNSON, P. R. Soc. London lxvi, p. 478.
Galictis barbara senex, Vera Cruz, b. *biologia*, Panama, p. 146, b. *trinitatis*, Trinidad, p. 148, THOMAS, Ann. Nat. Hist. (7) v, n. subspp.
Conepatus zorilla, v, p. 217, *arequipae*, vi, p. 467, Peru, THOMAS, op. cit. n. spp.
Lutreola vison ingens, Alaska, OSGOOD, North Amer. Fauna No. 19, p. 42, n. subsp.
Mustela americana actuosa, Alaska, OSGOOD, t. c. p. 43, n. subsp.; *marter*, gestation, COCKS, P. Zool. Soc. London 1900, p. 836.
Putorius nivalis italicus, p. 45, Italy, n. *ibericus*, p. 45, Spain, n. *siculus*, p. 46, Sicily, n. *caucasicus*, p. 48, Caucasus, n. *pallidus*, p. 48, Kokand, B. HAMILTON, Ann. Nat. Hist. (7) v; *rivosus eskimo*, Alaska, STONE, P. Ac. Philad. 1900, p. 44; n. subspp.; variation in *nivalis*, LÖNNBERG, v, p. 436, HAMILTON, vi, p. 243, Ann. Nat. Hist. (7), in *erminea*, JENTINK, Notes Leyden Mus. xxii, p. 25.
Lutra paranensis referred to subgenus *Pteronura*, NEHRING, SB. Ges. naturf. Berlin 1900, p. 221; *vulgaris*, weight and dimensions, LANG-KÄVEL, Zool. Garten xli, p. 244.
† *Ureavar minutus*, its synonymy, SCHLOSSER, Centralbl. Min. 1900, p. 261.
Ureus spelaeus from Bosnia, GRIMMER, Wiss. Mt. Bosnien vi, p. 842.

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- Of Scotland, TAYLOR, Ann. Scott. Nat. Hist. 1900, p. 69; Sealing, SOUTHWELL, Zoologist (4) iv, p. 65; duplicity of *cervix uteri* in *Odobenus* (= *Trichechus*) and *Otaria*, CLELAND, J. Anat. Physiol. norm. path. xxiv, p. 159.
Phoca vitulina, dentition, ANDERSON, Rep. Brit. Ass. 1900, p. 790; *fætida saimensis*, Lake Saima, p. 28, *ladogensis*, Lake Ladoga, p. 33, NORDQUIST, Acta Soc. Faun. Fenn. xv, art. 7, n. subspp.; *fætida sibirica*, p. 36, and *f. caspica*, p. 39, GMELIN, are the respective titles of the Baikal and Caspian forms.
Otaria velutina, p. 14, *fulva*, p. 17, *rufa*, p. 28, *argentata*, p. 38, *brachydactyla*, p. 43, *leucostoma*, p. 46, S. America, PHILIPPI, An. Mus. Chile 1892 (vide supra, p. 14, No. 233), n. spp.
Macrorhinus leoninus, note on, with fig., HALL, Zoologist (4) iv, p. 441; also figured by CUNNINGHAM, Sexual Dimorphism, pp. 67 & 68.

†CREODONTIA.

- Oxyaena* and *Patriofelis*, osteology and affinities, OSBORN, Bull. Amer. Mus. xiii, p. 269.

V. RODENTIA.

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SCIURIDÆ, CASTORIDÆ and GLIRIDÆ.

- Sciurus macdellandii manipurensis*, Manipur, *m. maritimus*, Fokien, p. 51, *m. monticolus*, Fokien, *m. formosanus*, Formosa, p. 52, BONHOTE, Ann. Nat. Hist. (7) v; *stramineus guayanus*, Ecuador, v, p. 150, *cocalis*, Amazonia, vi, p. 138, *simoni*, Ecuador, p. 294, *peruanus napi*, Rio Napo, p. 295, *versicolor*, Ecuador, p. 385, THOMAS, t. c.; *notatus*, *miniatuus*, p. 79, *tenuis surdus*, p. 80, Siam, *mimellus*, p. 218, *abbotti*, p. 224, *klassi*, p. 225, Tambelan Ids, *mimiculus*, p. 219, St Barbe Id, *tenuirostris*, p. 221, Tioman Id, *anambensis*, p. 223, Anambas Ids, *rufobrachialis libericus*, Liberia, p. 633, MILLER, P. Washington Ac. ii; *variabilis morulus*, BANGS, P. New England Zool. Club ii, p. 43; *hudsonicus petulans*, Alaska, OSGOOD, North Amer. Fauna, No. 19, p. 27; n. spp. & subsp.; *ludovicianus neglectus* (Gray, 1867) stands for *l. vicinus*, Bangs, 1896, NELSON, P. Soc. Washington xiii, p. 170.
- Funambulus castaneus*, Anambas Ids, MILLER, P. Washington Ac. ii, p. 217, n. sp.
- Ratufa ephippium baramensis*, Barain, p. 496, *e. sandakanensis*, Sandakan, p. 497, *e. nanogigas* and *e. sirhassenensis*, Natuna Ids, p. 498, BONHOTE, Ann. Nat. Hist. (7) v; *melanopepla*, p. 71, *pyrsonota*, p. 75, Siam, *anambe*, p. 215, Anambas Ids, *tumanensis*, p. 216, Tioman Id, MILLER, P. Washington Ac. ii : n. spp. & subsp.
- Xerus saturatus*, Ukamba, NEUMANN, Zool. Jahrb. Syst. xiii, p. 546, n. sp.
- Petaurista thomasi*, Borneo, HOSE, Ann. Nat. Hist. (7) v, p. 251; *lylei*, Siam, BONHOTE, P. Zool. Soc. London 1900, p. 192; *nitidula*, Natuna Ids, THOMAS, Nov. Zool. vii, p. 592 : n. spp.
- Sciuropterus thomsoni* and *hosei*, Borneo, THOMAS, Ann. Nat. Hist. (7) v, p. 275; *harrisoni*, Borneo, STONE, P. Ac. Philad. 1900, p. 462; *oreogenensis stephensi*, California, MERRIAM, P. Soc. Washington xiii, p. 152; *yukonensis*, Alaska, OSGOOD, North Amer. Fauna, No. 19, p. 25; *sabrinus makarovensis*, Labrador, SORNBORGER, Ottawa Natural. xiv, p. 48 : n. spp. & subsp.
- Eutamias caniceps*, Alaska, OSGOOD, North Amer. Fauna, No. 19, p. 28, n. sp.
- Spermophilus osgoodi*, p. 18, *barrovensis*, p. 19, *beringensis*, p. 20, MERRIAM, P. Washington Ac. xi; *empetra plesius*, OSGOOD, North Amer. Fauna, No. 19, p. 29 : n. spp. & subsp., Alaska.
- Arctomyia marmotta*, hibernation, RINA & MONTI, Rend. Ist. Lombardo (2) xxxiii, p. 372, DUBOIS, Ann. Soc. Linn. Lyon (2) xlvi, p. 102; renal epithelium during same, MONTI, Anat. Anz. xvii, p. 82.
- Castor fiber* in Prussia, DAHMS, Zool. Garten xli, p. 87.
- Submaxillary glands of *Gliridae*, AUERBACH, Rev. Suisse Zool. viii, p. 45.
- Myoxus glis*, notes on, BÄCHLER, Ber. St. Gall. Ges. 1898-99, p. 267, HEMPEL, Ber. Ges. Chemnitz xxiv, p. 98.
- Muscardinus avellanarius anglicus*, Britain, B. HAMILTON, P. Zool. Soc. London 1900, p. 86, n. subsp.

MURIDÆ.

- Gerbillus arenicolor*, E. Turkestan, MILLER, P. Soc. Washington xiii, p. 163, n. sp.
- Dendromys lovati*, Abyssinia, DE WINTON, P. Zool. Soc. London 1900, p. 82, pl. x, n. sp.

Dasyomys refusus, Liberia, MILLER, P. Washington Ac. II, p. 639, n. sp.
Arvicantis planifrons, Liberia, MILLER, t. c. p. 641, n. sp.
Mus, brain, HALLER, Morphol. Jahrb. xxviii, p. 347; ventricular arteries
 HENNEBERG, Anat. Anz. xvii, p. 321; conjunctive tissue of testicle
 REGAUD, C.R. Soc. Biol. iii, p. 26; *macrourus* and *macroura*, osteology,
 F. MAJOR, in Andrews's Monograph of Christmas Island, p. 34;
fuscipes, amended description, WATTS, Rec. Austral. Mus. iii, p. 190;
minutus, its races, R. HAMILTON, Ann. Nat. Hist., 7th v., p. 337;
decumanus, tarsus, BIGOTTI, Mem. Zool. Ital. xi, suppl. p. 17;
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 p. 144, *asper*, p. 145, *pellucens*, p. 147, *surifer*, p. 148, *Siam*, *recurrens*,
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 p. 412, *s. pallipes*, Turkestan, p. 417, *s. droo*, N.W. China, p. 418,
 B. HAMILTON, P. Zool. Soc. London 1900; *gigas*, p. 165, *barbatus*,
 p. 167, Madagascar, MILNE-EDWARDE, Bull. Mus. Paris 1900; *ciliatus*,
 Malay Peninsula, BONHOTTE, P. Soc. Zool. London 1900, p. 879, pl. lvi :
 n. spp. & subsp.

Oricetus has priority over *Hamster*, NEHRING, Zool. Anz. xxiii, p. 480;
 number of mammae in this genus, *Orictulus* and *Mesoricetus*, NEH-
 RING, t. c. p. 572.

Mesoricetus kanigi, Caucasus, NEHRING, t. c. p. 301, n. sp.

Hesperomys glirinus and *lanatus*, No. 13 (1896), p. 19, *puerulus*, p. 20,
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* This and the following are described as *Mus*.

- Ann. Nat. Hist. (7) v; *macconnelli*, Brit. Guiana, DE WINTON, Tr. Linn. Soc. London (2) viii, p. 52 : n. sp. & subsp.
- Oligoryzomys*, n. subg. for *Oryzomys navus*, BANGS, P. New England Zool. Club i, p. 94.
- Erioryzomus*, n. subg. p. 96, for *Oryzomys monochromos*, Santa Marta, n. sp. p. 97, BANGS, t. c.
- Neacomys*, n. g. for *Oryzomys spinosus*, Thomas, 1882, *N. spinosus tenuipes*, Bogota, n. subsp., THOMAS, Ann. Nat. Hist. (7) v, p. 153.
- Oryzomys sylvaticus*, p. 272, *balneator*, p. 273, Ecuador, *praetor*, p. 354, Peru, THOMAS, t. c.; *keayai* and *obtusirostris*, Peru, ALLEN, Bull. Amer. Mus. xiii, p. 226.
- Rhithrodontomys chrysopsis*, Mexico, MERRIAM, P. Soc. Washington xiii, p. 152, n. sp.
- Eligmodontia sorella*, Peru, THOMAS, Ann. Nat. Hist. (7) vi, p. 297, n. sp.
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III. AVES.

BY

R. BOWDLER SHARPE, LL.D., &c.

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INTRODUCTION.

PERHAPS the principal feature of the year 1900 as regards Ornithology is the marked increase in the number of new species described from Africa, but there are no works or Memoirs worthy of special notice beyond their fellows. In fact 1900 may be reckoned an ordinary year of steady progress, in which some very good work has been done. The writer has again to acknowledge the assistance he has received from Mr Charles Chubb in the compilation of this Record.

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head and neck figured; id. t. c. pp. 129–131, pl. xxviii: *C. unappendiculatus*, head and neck figured; id. t. c. pp. 132–134, pls. xxix & xxx: *C. unappendiculatus occipitalis*, head and neck figured; id. t. c. pp. 135 & 136, pl. xxxi: *C. unappendiculatus occipitalis* aberr. *laglaizei*, note on; id. t. c. p. 136: *C. unappendiculatus aurantiacus*, head and neck figured; id. t. c. p. 136, pl. xxxii: *C. unappendiculatus rufotinctus*, n. subsp., hab. unknown; id. t. c. p. 137: *C. philipi*, described and figured; id. t. c. pp. 138 & 139, pl. xxxiii: *C. papuanus*, head and neck figured; id. t. c. pp. 139–141, pl. xxxiv: *C. papuanus edwardsi*, head and neck figured; id. t. c. pp. 141–143, pl. xxxv: *C. loriz*, head and neck figured; id. t. c. pp. 142 & 143, pl. xxxviii: *C. picticollis*, head and neck figured; id. t. c. pp. 143 & 144, pl. xxxvi: *C. picticollis hecki*, head and neck figured; id. t. c. p. 144, pl. xxxvii: *C. bennetti*, head and neck figured; id. t. c. pp. 145–147, pl. xxxix: *C. bennetti maculatus*, n. subsp., hab. unknown; id. t. c. p. 148.

Order DINORNITHIFORMES.

See FORBES (163).

Order AEPYORNITHIFORMES.

See FORBES (163).

Sub-class CARINATÆ.

Neognathæ (Carinatae), Morphology and Phylogeny of; PYCRAFT, Tr. Zool. Soc. London xv, pp. 149–290.

Order TINAMIFORMES.

See FORBES (163).

Crypturus soui (Hermann) pro *C. pileatus* (Bodd.); RICHMOND, Auk xvii, p. 179.

C. inornatus, n. sp., Mexico; NELSON, Auk xvii, pp. 253 & 254.

Order GALLIFORMES.

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Crax alberti, young described; ALLEN, Bull. Amer. Mus. xiii, p. 127.

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Lagopus mutus, formerly in Rum; HARVIE-BROWN, Ann. Scott. Nat. Hist. 1900, p. 50.

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- P. montana* and other varieties of *P. perdix*; TEGETMEIER, Bull. B. O. C. xi, p. 30.
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Cerornis caboti, eggs described and colours of the soft parts of ♂ ♀; LA TOUCHE, Ibis 1900, pp. 29 & 30.
Euplocamus nycthemerus, longevity of life; OUSTALET, Ornis x, p. 62.
Phasianus colchicus, nesting in October; TEGETMEIER, Bull. B. O. C. xi, p. 5.
P. reevesii, tuberculosis in; DREW, Tr. N. Zealand Inst. xxii, pp. 54–56.
Numida rikwa, n. sp., S. of Rikwa Lake, E. Africa; REICHENOW, Ornith. Monber. viii, p. 39.
N. mitrata, note on; ALEXANDER, Ibis 1900, pp. 447 & 448.
Guttera edouardi, note on; id. t. c. pp. 448 & 449.
Meleagris gallopavo, longevity of life; OUSTALET, Ornis x, p. 62: nesting in the Huachuca Mts., Arizona; HOWARD, Condor ii, pp. 55–57, figs. 1, 2.
M. gallapavo merriami, n. subsp., Arizona; NELSON, Auk xvii, pp. 120–123.
Dendrocytus macrourus dilutus, n. subsp., Mexico; id. t. c. pp. 254 & 255.
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Colinus virginianus, *C. virginianus floridanus*, *C. virginianus texanus*, *C. ridgwayi*, notes on the moult; DWIGHT, Auk xvi, pp. 43–46.
Ortyz virginianus, note on; MEREL, Ornis x, pp. 191–195.
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C. montezumæ mearnsi, n. subsp., Texas, New Mexico, and Arizona; NELSON, Auk xvii, pp. 255 & 256.
Odontophorus atrifrons, n. sp., Valparaiso, U. S. Colombia; ALLEN, Bull. Amer. Mus. xiii, pp. 127 & 128.

Order TURNICIFORMES.

Turnix olivei, n. sp., N. Queensland; ROBINSON, Bull. B. O. C. x, p. xlili.

Order PTEROCLIDIFORMES.

See FORBES & ROBINSON (165).

- Syrrhaptes*, note on the systematic position; SHUFELDT, Amer. Natural. xxxiv, pp. 11–16, cum fig.
Pterocles, notes on the systematic position; SHUFELDT, Amer. Natural. xxxiv, pp. 11–16, cum fig.
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P. gutturalis saturatior, n. subsp., Athi Plain, Brit. E. Africa; HARTERT, Nov. Zool. vii, p. 29.
P. bicinctus, note on; ALEXANDER, Ibis 1900, pp. 449 & 450.

Order COLUMBIFORMES.

Columba, see FORBES, H. O. & ROBINSON, H. C. (165).

- Treron vordermanni*, n. sp., Kangean Island; FINSCH, Notes Leyden Mus. xxii, p. 162.

- Ptilopus coronulatus*, eggs described; LE SOUËF, Ibis 1900, p. 616.
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Pennula sandwichensis and *P. milleri*, figured; ROTHSCHILD, Avif. Leyson, Part III, pl. lxxvi.
Notornis mantelli, note on its origin and extinction; HENRY, Tr. N. Zealand Inst. xxii, pp. 53 & 54.

Order COLYMBIFORMES.

- See FORBES (163).
Gavia Forster (nec Gm., apud auct. amer.) = *Urinator* Cuv.; REICHENOW, Ornith. Monber. viii, pp. 135 & 136.
G. arctica, in Colorado; AIKEN, Auk xvii, p. 298.

Order SPHENISCIFORMES.

- See OUSTALET (363A).
Notes on various species; RACOVITZA, Bull. Soc. Belge Geol. 1900, pp. 21-26, figg. 1-6.
Eudyptes chrysocome, plumages of the young described; HALL, Ibis 1900, pp. 32 & 33.

Order PROCELLARIIFORMES.

- Notes on various species; RACOVITZA, Bull. Soc. Belge Geol. 1900, pp. 17-19.
Oceanites oceanicus, notes on the nesting habits; HALL, Ibis 1900, pp. 19-21.
Puffinus cuneatus and allies, nesting habits; ANTHONY, Auk xvii, pp. 247-252, pl. viii.
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P. gravis, in Scottish waters; NEWTON, Ann. Scott. Nat. Hist. 1900, pp. 142-147.
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- P. yellowianus*, near Bridlington, Yorks.; SHARPE, Bull. B. O. C. x, p. xlvi: at Scarborough; CLARKE, Zoologist 1900, p. 521.
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D. platei, head figured; REICHENOW, J. Ornith. 1900, p. 245.

Order ALCIFORMES.

- Mergulus alle*, on the Solway Firth; MACPHERSON, Ann. Scott. Nat. Hist. 1900, p. 123.
Micrurria, notes on the genus; ANTHONY, Auk xvii, pp. 168 & 169.

Order LARIFORMES.

- Gavia* Gm. = *Larus* Linn. and *Gavia* Forster (nec Gm.) = *Urinator* Cuv.; REICHENOW, Ornith. Monber. viii, pp. 135 & 136.
 Ueber die Fusshaltung fliegender Möven; ROTH, Ornith. Monber. viii p. 156.
Sterna, nesting of species on the Farquhar Islands; FARQUHAR, Ibis 1900, pp. 63–67.
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Order CHARADRIIFORMES.

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Vanellus cristatus, distribution in France in 1885 and 1886; TERNIER, Ornitis x, pp. 77–96.
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Order GRUIFORMES.

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Ardea sumatrana, in Negros Is., Philippines; CLARKE, Ibis 1900, p. 357.

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A. cerulea, in Labrador; BANGS, Auk xvii, p. 386.

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Ardeola ida, note on and figured; MARTORELLI, Atti Soc. Ital. xxxix, pp. 349–356, pl. vii.

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Botaurus stellaris, in Stirlingshire; HARVIE-BROWN, Ann. Scott. Nat. Hist. 1900, p. 122: in Ayrshire; PATERSON, t. c. p. 122: in Nairn; BUCKLEY, t. c. p. 122.

Order PHÖNICOPTERIFORMES.

Phoenicopterus roseus, notes on the nesting; GOUBIE, Ornis x, pp. 229–234.

Order ANSERIFORMES.

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F. cristata, breeding in Shropshire; FORREST, Zoologist 1900, pp. 506-510, cum fig.
Clangula glaucion, notes on; BAKER, J. Bombay Soc. xiii, pp. 13-20.
C. clangula americana, notes on the breeding habits; BREWSTER, Auk xvii, pp. 207-216, pls. vi & vii.
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Order ACCIPITRIFORMES.

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Astur jardinei is from British Guiana; SHARPE, Bull. B. O. C. x, p. lvi.
A. natalis, figured; R. B. SHARPE, Monogr. Christmas Isl. p. 46, pl. v.

- Lophospiza trivirgata*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 489.
- Accipiter nisus*, nesting habits; MEIKLEJOHN, Zoologist 1900, p. 381: DAVENPORT, t.c. pp. 426-428.
- A. affinis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 490.
- Buteo ferox*, notes on; OBERHOLSER, P. U. S. Mus. xxii, pp. 213-217: *B. zimmermannae* and allies, distribution in Germany; SCHALOW, J. Ornith. 1900, p. 249.
- Urubitinga urubitinga*, in a cave at Caripé, Venezuela; ROTHSCHILD, Bull. B. O. C. x, p. 411.
- Morphnus guianensis*, figured; SALVIN & GODMAN, Biol. Centr.-Amer. Aves iii, Part CLX, pl. 63.
- Thalassactes macrurus*, n. sp., Yakutsk, E. Siberia; MENZBIER, Bull. B. O. C. xi, p. 4.
- Gypaetus barbatus*, in the Tirol; TSCHUSI, Ornith. Jahrb. xi, pp. 225-227.
- Aquila*, notes on the species: *A. murina*, n. sp., E. Himalayas; SUSCHKIN, Bull. B. O. C. xi, p. 8: *A. fulvescens*, in S.E. Europe; FÜHRER, Ornith. Jahrb. xi, p. 25; KLEINSCHMIDT, Ornith. Monber. viii, pp. 65 & 66: in North Albania, notes on; ROTHSCHILD, Bull. B. O. C. x, pp. li & lii.
- Eudrometus weiskei*, n. sp., S.E. New Guinea; REICHENOW, Ornith. Monber. viii, pp. 185 & 186.
- Lophotriorchis lucani*, remarks on; SUSCHKIN, Bull. B. O. C. x, p. 31.
- Spizaetus nipalensis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 490.
- Lophoetes occipitalis*, in North Angola; FERREIRA, J. Lisb. (2) vi, No. xxi, p. 54.
- Haliaeetus albicilla*, in the Yukon region, Alaska; BISHOP, Biol. Surv. U. S. Agric. 19, pp. 73 & 74: *H. vocifer*, note on the habits; ALEXANDER, Ibis 1900, pp. 435 & 436.
- Milvus ictinus*, an old record in Fifeshire; HARVIE-BROWN, Ann. Scott. Nat. Hist. 1900, p. 49: *M. regalis*, in Kent; GREEN, Knowledge xxiii, No. 173, p. 61.
- Microhierax melanoleucus*, note on; LA TOUCHE, Ornith. x, pp. 183-186.
- Lithofalco axalon pallidus*, n. subsp., Kirghis Steppes; SUSCHKIN, Bull. B. O. C. xi, p. 6.
- Falco regulus* must stand for the Merlin, *F. merillus* Gerini is untenable; OBERHOLSER, Auk xvii, p. 173.
- Hierofalco altricus*, remarks on; SUSCHKIN, Bull. B. O. C. xi, p. 3: from Turkestan; id. t. c. p. 3: *H. lorenzi*, n. sp., C. Siberia; MENZBIER, Bull. B. O. C. xi, pp. 3 & 4.
- Falco islandus*, nestling plumage described; CHAPMAN, Auk xvii, p. 387.
- Tinunculus*, morphology of; SUSCHKIN, Mem. Soc. Moscou xvi, pp. 1-163, pls. 1-6.
- Certhneis tinunculus*, evidence of its insect-eating propensities; BERGE, Ornith. Monber. viii, pp. 37 & 38: *C. saturata*, male described; GRANT, Ibis 1900, p. 601.
- Tinunculus naumannni*, in South Bohemia; JANDA, Ornith. Jahrb. xi, pp. 189-195: TALSKY, t. c. xi, pp. 235 & 236.

Order STRIGIFORMES.

- Osteology of the *Strigidae* and *Bubonidae*; SHUFELDT, P. Amer. Phil. Soc. xxxix, No. 164, pp. 665-722, pls. x-xvii.
- Morphology of the cranium in the Owls; SHUFELDT, J. Morphol. xvii, pp. 119-176, pls. xvii-xx.
- Asio otus*, in Barra; MAGILLIVRAY, Ann. Scott. Nat. Hist. 1900, p. 121: in Islay; SKIRVING, t. c. p. 184: GILMOUR, t. c. p. 49.

- Bubo ascalaphus*, eggs from the Dahshur Pyramid, Egypt; W. ROTHSCHILD, Bull. B. O. C. xi, p. 10: *B. mackinderi*, figured; SHARPE, P. Zool. Soc. London 1900, pl. xlivi.
- Pulsatrix fasciaventris*, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 368, pp. 32 & 33.
- Pisorhina* Kaup, vice *Scops* Brünn. (nec Briss.); REICHENOW, Ornith. Monber. viii, p. 68: *P. magica* and its allies; HARTERT, Nov. Zool. vii, pp. 227 & 228.
- Scops gnu*, in Shetland; CLARKE, Ann. Scott. Nat. Hist. 1900, p. 184: *S. latouchi*, n. sp., Fohkien, China; RICKETT, Bull. B. O. C. x, p. lvi.
- Bubo letti* is a *Scops*; SHARPE, Bull. B. O. C. x, p. lv.
- Megascops flammeolus* and *M. flammeolus idahoensis*, life history and distribution; OBERHOLSER, Ornith. x, pp. 23-38.
- Athene chiaradiae*, n. sp., Udine, Italy; GIGLIOLI, Avicula iv, pp. 57-60.
- Ninox natalis*, figured; R. B. SHARPE, Monogr. Christmas Isl. p. 47, pl. iv.
- Syrnium nebulosum*, breeding in Colorado; AIKEN, Auk xvii, p. 298.
- Gisella jheringi* is from Rio Grande do Sul; JHERING, Ibis 1900, p. 217.
- Carine noctua*, in Flintshire; FORREST, Zoologist 1900, p. 482: note on; MEADE-WALDO, t. c. p. 556: in North Wales; DOBIE, t. c. p. 556.
- Speotyto cunicularia caricola*, nomen emend. pro *S. bahamensis* Maynard nec Cory; BANGS, Auk xvii, p. 287.
- Glaucidium sylvaticum*, figured; BÜTTIKOFER, Notes Leyden Mus. xxi, pl. 13: *G. borneense* Sharpe = *G. sylvaticum*; id. t. c. p. 155: *G. whitelyi*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 488.
- Aluco* Flem. The first tenable generic name for the Barn Owls; COUES, Auk xvii, pp. 65 & 66.
- Strix flammea* and its allies; HARTERT, Nov. Zool. vii, pp. 531-534: *S. flammea kirchhoffi* Brehm. is the name for the English race; id. t. c. p. 533: *S. flammea schmitzi*, n. subsp., Madeira; id. t. c. p. 534: *S. meridionalis* Koenig = *S. paradoxa* Brehm.; id. t. c. p. 533: *S. pratincola*, at Toronto; FLEMING, Auk xvii, p. 177: *S. cayennii*, n. sp., Buru; HARTERT, Nov. Zool. vii, p. 228.

Order PSITTACIFORMES.

- Eos kuehni* = *E. rubra* juv.; W. ROTHSCHILD in Sharpe's Handl. B. ii, p. 2: *E. bornea* and *E. cyanonotus*, notes on; HARTERT, Nov. Zool. vii, pp. 228 & 229.
- Trichoglossus nova-hollandiae septentrionalis*, n. subsp., North Queensland; ROBINSON, Bull. Liverp. Mus. ii, p. 115: eggs described; LE SOUËR, Victorian Natural. xvii, p. 146.
- Charmosyna bella*, n. sp., Wharton Range, New Guinea; DE VIS, Ann. Queensland Mus. No. 5, pp. 12 & 13, pl. viii.
- Oreopithecus frontalis*, n. sp., Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 186.
- Cacatua galerita triton* and allies, note on; ROBINSON & LAVEROCK, Ibis 1900, pp. 642-644.
- Nasitera bruijni*, from Ambernoh River, Dutch New Guinea; ROTHSCHILD, Bull. B. O. C. x, p. ci.
- Pyrrhura griseipectus*, n. sp., Hab. ?; SALVADORI, Ibis 1900, pp. 672 & 673: *P. hypoxantha*, described and figured; id. t. c. pl. xiv: *P. chiripepe* (Vieill.) is distinct from *P. vittata* (Shaw); id. t. c. pp. 668-671: a key to the species; id. t. c. pp. 673 & 674.
- Brotogeris virescens*, breeding habits; W. A. SCHULZ, Ornith. Monber. viii, pp. 56 & 57.
- Amazona oratrix tresmariae*, n. subsp., Tres Marias Isl.; NELSON, Auk xvii, p. 256.

PSITTACIFORMES, CORACIIFORMES.

Aves 43

Paecephalus meyeri erythreæ and *P. meyeri transvaalensis* O. Neumann, are not distinct from *P. meyeri*; ALEXANDER, Ibis 1900, pp. 429 & 430.

Prioniturus mada, n. sp., Buru; HARTERT, Nov. Zool. vii, p. 230.

Pulæornis salvatori Oust. is distinct from *P. derbyanus* Fraser; GRANT, Ibis 1900, p. 600.

Agapornis lilianæ, note on; ALEXANDER, Ibis 1900, pp. 431 & 432.

Platycercus macgillivrayi, n. sp., North Queensland; NORTH, Victorian Natural. xvii, pp. 91-93, 113 & 114: *P. icterotis*, eggs described; LE SOUËF, Ibis 1900, p. 460.

Order CORACIIFORMES.

Sub-order PODARGI.

Batrachostomus, sp. inc. Negros, Philippines; CLARKE, Ibis 1900, pp. 355 & 356. [*B. menagei* ♀.]

Sub-order CORACIÆ.

Atelornis squamigerus is the type of the genus *Atelornis*; L. STEJNEGER in Sharpe's Handl. B. ii, p. 45.

Uratelornis chimæra, note on; OUSTALET, Bull. Mus. Paris 1899, no. 6, pp. 280-282.

Eurystomus calonyx is a summer visitor to Kuatun [not *E. orientalis* as stated Ibis 1892, p. 478]; LA TOUCHE, Ibis 1900, p. 44.

Sub-order HALCYONES.

Ceryle lugubris continentalis, n. subsp., Himalayas; HARTERT, Nov. Zool. vii, p. 534.

Alcedo euryzone, at Pankalan Ampat, Sarawak; SHELFORD, J. Straits Asiatic Soc. No. 33, p. 18: *A. grandis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 487.

Ceyx tridactyla, in Hainan; id. t. c. p. 487.

Syma weiskei, n. sp., Astrolabe Mts. S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 186.

Dacelo gigas minor, n. subsp., North Queensland; ROBINSON, Bull. Liverp. Mus. ii, p. 116 = *D. gigas*; ROBINSON & LAVEROCK, Ibis 1900, p. 638: *D. gaudichaudii*, nest and eggs described; LE SOUËF, Ibis 1900, pp. 616 & 617.

Halcyon farquhari, figured; SHARPE, Ibis 1900, pl. vii: *H. semicerulea hyacinthina*, n. subsp., E. Africa; REICHENOW, J. Ornith. 1900, p. 249: *H. australasiae dammeriana*, n. subsp., Dammer Isl.; HARTERT, Nov. Zool. vii, p. 19: *H. sancta*, figured: SETH-SMITH, Avicul. Mag. vi, pl. i.

Sub-order BUCEROSES.

Buceros (Pholidophalus) kethuloi, n. sp., Congo Free State; DUBOIS, Ornith. Monber. viii, p. 69: *B. sharpii*, in North Angola; FERREIRA, J. Lisb. (2) vi, No. xxi, p. 54.

Lophoceros erythrorhynchus, note on; ALEXANDER, Ibis 1900, pp. 101 & 102.

Sub-order UPUPÆ.

Upupa epops pallida, n. subsp., Tunis; ERLANGER, J. Ornith. 1900, pp. 15-17.

Rhinopomastus schalowi, n. sp., Equatorial Africa; NEUMANN, t. c. pp. 221 & 222: *R. cabanisi*, figured; DUBOIS, Synopsis Avium, pl. iii, fig. 1.

Sub-order MEROPES.

See DUBOIS (138).

Meliophagus sharpei, n. sp. [*M. cyanostictus*, auct. nec Cab.]; HARTERT, Nov. Zool. vii, p. 35: is true *M. cyanostictus* Cab., *M. pusillus ocularis*, n. subsp., N.E. Africa; REICHENOW, Ornith. Monber. viii, p. 87.

Merops batesiana, n. sp., French Congo, *M. northcotti*, n. sp., Gold Coast; SHARPE, Bull. B. O. C. x, pp. xlvi & xlxi: *M. natalensis*, note on; ALEXANDER, Ibis 1900, pp. 97-99: *M. boehmi*, in the Zambezi region; id. t. c. p. 97.

Nyctiornis athertoni, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 486.

Sub-order MOMOTI.

Momotus lessoni goldmani, n. subsp., Mexico; NELSON, Auk xvii, pp. 256 & 257.

Sub-order CAPRIMULGI.

See DUBOIS (138).

On the palate of certain forms of *Caprimulgidae*; PYCRAFT, Bull. B. O. C. xi, pp. 12 & 13.

Nyctibius jamaicensis mexicanus, n. subsp., Mexico; NELSON, Auk xvii, p. 260.

Macropsalis forcipata Burm. = *M. creagra* (Bp.); E. HARTERT in Sharpe's Handl. B. ii, p. 81.

Antrostomus oaxacae, n. sp., Mexico; NELSON, Auk xvii, pp. 260 & 261: *A. chiapensis*, n. sp., Mexico; id. t. c. p. 261.

Caprimulgus fulleborni, n. sp., New Heligoland, W. of Lake Nyass; REICHENOW, Ornith. Monber. viii, p. 98: *C. eximus*, near Khartoum; H. F. WITHERBY, Bull. B. O. C. x, p. cv: *C. griseatus*, female described; CLARKE, Ibis 1900, pp. 353 & 354: *C. stellatus*, figured; GRANT, Ibis 1900, pl. iv: *C. frenatus* and *C. rufifrons* belong to the group which have a red collar; SHARPE, Ibis 1900, p. 499.

Sub-order CYPSELI.

See DUBOIS (138).

Chaetura thomensis, n. sp., St Thomé Isl. W. Africa; HARTERT, Bull. B. O. C. x, p. liv: *C. caudacuta*, breeding near Nerochinski; H. NOBLE, Bull. B. O. C. x, p. xlvi: *C. pelasgia*, its nesting; SCOTT, Bull. B. O. C. x, p. liv: *C. stictolæma*, from the Zambezi region; ALEXANDER, Ibis 1900, p. 93.

Cypselus v. Apus for the typical Swifts; SHARPE, Handl. B. ii, pp. v, 95: *C. alfredi*, n. sp., Mbara, Nyasaland; SHELLEY, B. Africa, ii, Part II, p. 345: *C. melba*, anatomy of; BURI, Jena Zeitschr. xxxiii, pp. 361-610, pls. xvii-xxii: *C. apus*, nesting habits; STEELE-ELLIOTT, Zoologist 1900, pp. 479-481: *C. brunneitorques griseifrons*, n. subsp., Mexico; NELSON, Auk xvii, p. 262.

Sub-order TROCHILI.

See DUBOIS (138).

Trochilidae; HARTERT, Das Tierreich, Lief. 9, pp. x, 254.

The Rufous Humming-birds of Cape Disappointment; KOBBÉ, Auk xvii, pp. 8–15.

Doryfera Gould vice *Hemistephania* Reichenb.; HARTERT, J. Ornith. 1900, p. 358.

Phaeothornis berlepschi Hartert = *P. syrmatophorus* Gould; id. t. c. p. 359.

Eutoxeres baroni Hartert = *E. heterurus* Gould; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 368, p. 2: the species is distinct; HARTERT, J. Ornith. 1900, pp. 359 & 360.

Agriptilia sturmi laeta, n. subsp., Nauta, Upper Amazonia; id. t. c. p. 360.

Chlorostilbon salvini, from Panama; id. t. c. p. 361.

Thalurania ridgwayi, n. sp., S. Mexico; NELSON, Auk xvii, pp. 262 & 263: *T. venusta* is distinct from *T. columbica*; HARTERT, J. Ornith. 1900, p. 362.

Heliodoxa jacsoni × *Eugenia imperatrix*; E. HARTERT, Bull. B. O. C. x, p. xxxix.

Helianthea hamiltoni, n. sp., E. Ecuador; GOODFELLOW, Bull. B. O. C. x, p. xlvi.

Helianthea sp.; ALLEN, Bull. Amer. Mus. xiii, p. 139: probably females of *Leucuria phalerata*; id. t. c. p. 184.

Lafresnayeia cinereorufa Boucard = *L. lafresnayeia* Bois.; HARTERT, J. Ornith. 1900, p. 364: *L. gayi* should stand as *L. saül*; id. t. c. p. 364.

Calypte costae × *Stellula calliope*; HARTERT, Bull. B. O. C. x, p. xxxix.

Sub-order COLII.

Colius affinis, note on; SHARPE, P. Zool. Soc. London 1900, p. 600: *C. macrourus pulcher*, n. subsp., Teita and Taweta, E. Africa; NEUMANN, J. Ornith. 1900, p. 190.

Order TROGONES.

Trogon virginalis, Cab. et Hein. is distinct from *T. collaris*, Vieill.; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 364, p. 17.

Trogon sp. from Gualea (W. Ecuador) is probably distinct from *T. melanurus*, iid. t. c. p. 18.

Harpactes hainanus, n. sp., Hainan; GRANT, Bull. B. O. C. x, p. xxxvii; id. P. Zool. Soc. London 1900, p. 485.

Hapaloderma rufiventris, figured; DUBOIS, Synopsis Avium, pl. ii, fig. 3.

Order COCCYGES.

Sub-order MUSOPHAGI.

Turacus chalcolophus, figured; HARTERT, Nov. Zool. vii, p. 278, pl. i.

Sub-order CUCULI.

Cuculus. Catalogue of the collection in the Leyden Museum; O. FINSCH, Notes Leyden Mus. xxii, pp. 75–125.

Cuculus canorus, parasitic on *Turdus musicus*; READ, Zoologist 1900, p. 520: breeding in the London District; MARTIN, t. c. p. 481: note on; WILSON, t. c. p. 481: note on the habits; MEIKLEJOHN, t. c. pp. 262–264: notes on; WOODRUFFE-PEACOCK, Naturalist 1900, 99–108.

Cacomantis schistaceigularis, n. sp., Espiritu Santo, New Hebrides; SHARPE, Ibis 1900, pp. 338 & 339: *C. weiskei*, n. sp., Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 186.

Chrysococcyx rufomerus, n. sp., Dammer Isl.; HARTERT, Nov. Zool. vii, p. 21.

Chrysococcyx innominatus, n. sp., Kissir Isl., Timor; FINSCH, Notes Leyden Mus. xxii, p. 94: *C. plagoensis*, parasitic on *Acanthiza uropygialis* and *Petraea goodenovii*; HALL, Victorian Natural. xvii, p. 128: parasitic on *Pardalotus assimilis*; id. t. c. pp. 40 & 41: *C. maculatus*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 484.

Coccyzus americanus, in Colombia; ALLEN, Auk xvii, p. 364: on the shores of Menai Straits; DICKINSON, Ibis 1900, p. 219.

Eudynamis. Review of the species; HARTERT, Nov. Zool. vii, pp. 230-232: *E. cyanocephala everetti*, n. subsp., Sumba Isl.; id. t. c. p. 231: *E. orientalis salvadorii*, n. subsp., New Britain; id. t. c. p. 232.

Centropus sinensis, embryo and nestlings described and figured; SHELFORD, Ibis 1900, pp. 654-667, pl. xiii, figg. in text 1-5: *C. cupreicauda*, in Uhehe, E. Africa; REICHENOW, Ornith. Monber. viii, p. 4.

Order SCANSORES.

Sub-order INDICATORES.

Indicator barianus Heuglin is distinct from *I. major*; ALEXANDER, Ibis 1900, p. 426: *I. minor teitensis*, n. subsp., Teita, E. Africa; NEUMANN, J. Ornith. 1900, p. 195: *I. lovati*, n. sp., Abyssinia; GRANT, Bull. B. O. C. x, p. xxxix.

Sub-order CAPITONES.

Lybius Hermann pro *Melanobucco* Shelley; RICHMOND, Auk xvii, p. 179. *Smilornis soverbyi*, in Northern Rhodesia; SCLATER, P. Zool. Soc. London 1900, p. 3.

Barbatula centralis, n. sp., Ndussuma, E. Africa; REICHENOW, Ornith. Monber. viii, p. 40: *B. leucomystax*, in Uhehe; id. t. c. p. 4.

Cyanops mystacophanos, characters of female described; BUTTIKOFER, Notes Leyden Mus. xxi, p. 160.

Semnornis, nomen emend. pro *Pan* Richm. nec Oken; RICHMOND, Auk xvii, p. 179.

Sub-order RHAMPASTIDES.

Rhamphastos carinatus, from Colombia; ALLEN, Bull. Amer. Mus. xiii, p. 133.

Order PICIFORMES.

Sub-order PICI.

Osteology of the Woodpeckers; SHUFELDT, P. Amer. Phil. Soc. xxxix, No. 164, pp. 578-632, pl. ix.

Colaptes auratus, monograph of; BURNS, Wilson Bulletin, No. 31 (2) vii, pp. 1-82: *C. cafer collaris* and *C. cafer saturatior*, notes on; NELSON, Auk xvii, pp. 123 & 124.

Chloronlerpes rubripileus, n. sp., Ecuador; SALVADORI & FESTA, Boll. Mus. Torino xv, No. 368, p. 14.

Campetheria hausburgi, n. sp., Mt. Kenya; SHARPE, Bull. B. O. C. x, p. xxxvi.

- Gecinulus viridanus*, colours of the soft parts of ♂ and ♀; LA TOUCHE, Ibis 1900, pp. 43 & 44.
- Melanerpes dubius verocrucis*, n. subsp., Mexico; NELSON, Auk xvii, p. 259: *M. frontalis*, n. sp., Mexico; id. t. c. pp. 257 & 258: *Melanerpes cruentatus*, and *M. hargitti*, figured (heads); DUBOIS, Synopsis Avium, pl. ii.
- Dendrocopos major* and its allies; HARTERT, Nov. Zool. vii, pp. 527-531: *D. major anglicus*, n. subsp.; id. t. c. p. 528.
- Dryobates villosus intermedius*, n. subsp., Mexico; NELSON, Auk xvii, pp. 259 & 260.
- Picoides arcticus tenuirostris*, n. subsp., Oregon and California; BANGS, Auk xvii, pp. 131 & 132: *P. americanus bacatus*, n. subsp., Eastern North America; id. t. c. pp. 136-138: *P. americanus labradorius*, n. subsp., Labrador: id. t. c. p. 138.
- Dendromus malherbei nyassae*, n. subsp., Muansa, E. Africa; NEUMANN, J. Ornith. 1900, p. 204: *D. malherbei fulleborni*, n. subsp., Lake Nyassa; id. t. c. pp. 204 & 205: *D. taeniolaemus* (?) and *D. neumannii* (?) figured; id. t. c. Taf. i.
- Dendropicos guineensis massaicus*, n. subsp., Lake Nguruman, E. Africa; NEUMANN, t. c. p. 206: *D. guineensis centralis*, n. subsp., Muansa, E. Africa; id. t. c. pp. 206 & 207: *D. guineensis sharpei*, from Uganda; id. t. c. p. 207: *D. simoni*, n. sp., Abyssinia; GRANT, Bull. B. O. C. x, p. xxxviii.
- Iyngipicus oboletus ingens*, n. subsp., Nairobi, Brit. E. Africa; HARTERT, Nov. Zool. vii, p. 33.
- Mesopicos goertae* and its allies, Notes on *M. goertae abessinicus*, n. subsp., N.E. Africa: *M. goertae centralis*, Equat. Africa; REICHENOW, Ornith. Monber. viii, pp. 58 & 59: *M. rhodoeogaster* Fisch. & Reichen.=*M. spodocephalus* (Rüpp.); NEUMANN, J. Ornith. 1900, p. 201: *M. griseocephalus*, on Kilimandjaro; id. t. c. p. 201.
- Lepocœtes sinensis*, colours of the soft parts of ♂ and ♀; LA TOUCHE, Ibis 1900, p. 43.
- Campephilus principalis*, in Louisiana; BERGER, Auk xvii, pp. 97-99.
- Ilynx ruficollis* Wagl. pro *I. pectoralis* Vig.; RICHMOND, Auk xvii, p. 179.

Order PASSERIFORMES.

Family PTEROPTOCHIDÆ.

- Scytalopus analis*, figured; DUBOIS, Synopsis Avium, pl. iii, fig. 2.
- Zeledonia*, an Oscinine form, not related to *Scytalopus*; PYCRAFT, Bull. B. O. C. xi, p. 12.

Family FORMICARIIDÆ.

- Thamnophilus torquatus*, ♂ ♀, figured; DUBOIS, Synopsis Avium, pl. v, figgs. 1 & 2.
- Dyctithamnus flemmingi*, n. sp., N. Ecuador; HARTERT, Bull. B. O. C. xi, pp. 38 & 39.
- Myrmotherula guayabambae*, n. sp., Peru; SHARPE, Bull. B. O. C. xi, p. 2: *M. sancte-martae*, n. sp., Valparaiso, U.S. Colombia: ALLEN, Bull. Amer. Mus. xiii, pp. 160 & 161: *M. brevicauda*, ♂ ♀, figured; DUBOIS, Synopsis Avium, pl. vi, figgs. 2 & 3.
- Formicivora tobagensis*, n. sp., Tobago; DALMAS, Mem. Soc. zool. France xiii, p. 141.
- Hypocnemis naevioidea*, figured; DUBOIS, Synopsis Avium, pl. iii, fig. 3.
- Manitup Desmarest* pro *Pithys* Vieill.; RICHMOND, Auk xvii, p. 179.
- Grallaria bangsi*, n. sp., El Libano, U.S. Colombia; ALLEN, Bull. Amer.

Mus. xiii, pp. 159 & 160 : *G. parambae*, n. sp., N. Ecuador ; ROTHSCHILD, Bull. B. O. C. xi, pp. 36 & 37 : *G. gigantea*, figured ; DUBOIS, Synopsis Avium, pl. vi, fig. 1.
Grallaricula cumanensis, n. sp., Venezuela ; HARTERT, Bull. B. O. C. xi, pp. 37 & 38.

Family DENDROCOLAPTIDÆ.

Geositta brevirostris, n. sp., Patagonia ; SCOTT, Bull. B. O. C. x, p. lxiii : *G. rufipennis* and *G. isabellina*, figured ; DUBOIS, Synopsis Avium, pl. vii.
Upucerthia darwini, n. sp., Mendoza : *U. saturation*, n. sp., Chile : *U. fitzgeraldi*, n. sp., Argentina ; id. t. c. p. lxiii.
Cinclocerthia ruficauda, n. sp., Chili : *C. molitor*, n. sp., Chile : *C. oreobates*, n. sp., Colombia : *C. sparsimstriatus*, n. sp., Peru [= *C. tacanowekii*, Berl.] ; id. t. c. p. lxii.
Henicorhynchus wallisi, n. sp., Patagonia ; id. t. c. p. lxiii.
Sittasomus Sylvioides jaliscensis, n. subsp., Mexico ; NELSON, Auk xvii, pp. 264 & 265.
Dendroornis flavigaster megarhynchos, n. subsp., S.W. Mexico ; id. t. c. p. 265 : *D. striatigularis*, n. sp., Alta Mira, Mexico ; RICHMOND, P. U. S. Mus. xxii, pp. 317 & 318 : *D. guttata*, figured ; DUBOIS, Synopsis Avium, pl. vi, fig. 2.
Picolaptes albolineatus, figured ; DUBOIS, Synopsis Avium, pl. vi, fig. 1.
Dendrocolaptes sancti-thomae, figured ; DUBOIS, Synopsis Avium, pl. v, fig. 3.

Family TYRANNIDÆ.

See DUBOIS (138).

Agriornis poliosoma, n. sp., Patagonia ; SCOTT, Bull. B. O. C. x, p. lv : *A. leucurus*, n. sp., Patagonia ; id. t. c. p. lxiv.
Ochthoeca jesupi, n. sp., San Lorenzo, U.S. Colombia ; ALLEN, Bull. Amer. Mus. xiii, pp. 151 & 152 : *O. olivacea*, n. sp., Valparaiso, U.S. Colombia : id. t. c. p. 152.
Muscisaxicola garretti, n. sp., Patagonia ; SCOTT, Bull. B. O. C. x, p. lv [= *M. capistrata* Burm. ; SCHALOW, Ornith. Monber. 1900, p. 97] : *M. hatcheri*, n. sp., Patagonia ; id. t. c. p. lv.
Myiopagis placens jaliscensis, n. subsp., Mexico ; NELSON, Auk xvii, p. 264.
Phyllosmyias venezuelensis, n. sp., Venezuela ; HARTERT, Bull. B. O. C. xi, p. 39.
Myiozetetes texensis (Giraud) = *M. superciliosus* (Bp.) ; NELSON, Auk xvii, p. 124 : *M. similis superciliosus* is the name for the Central American form ; id. t. c. p. 124.
Myiobius assimilis, n. sp., Valparaiso, U.S. Colombia ; ALLEN, Bull. Amer. Mus. xiii, pp. 144 & 145.
M. luteus, n. sp., N.W. Ecuador ; HARTERT, Bull. B. O. C. xi, p. 40.
Sayornis saya yukonensis, n. subsp., Alaska ; BISHOP, Auk xvii, pp. 115 & 116 : *S. nigricans* and its subspecies, notes on the distribution ; NELSON, Auk xvii, pp. 124 & 125.
Empidonax timidus, n. sp., Mexico ; NELSON, t. c. p. 263 : *E. bairdi perplexus*, n. subsp., Mexico ; id. t. c. pp. 263 & 264.
Contopus richardsonii saturatus, n. subsp., Alaska ; BISHOP, Auk xvii, pp. 116-118.

Family PIPRIDÆ.

Pipra opalizans, note on ; SCHULZ, J. Ornith. 1900, pp. 242 & 243.
Chiroxiphia pareola atlantica, n. subsp., Tobago ; DALMAS, Mem. Soc. zool. France xiii, p. 139.

Family COTINGIDÆ.

Pachyramphus salvini, nomen emend. pro *P. similis*, Salvin nec Cherrie: DUBOIS, Synopsis Avium, Fasc. iii, p. 212.

Lipaugus holerythrus, figured; DUBOIS, Synopsis Avium, pl. viii, fig. 1.

Attila brasiliensis parambre, n. subsp., N. Ecuador; HARTERT, Bull. B. O. C. xi, p. 39.

A. parvirostris, n. sp., Minca, Santa Marta; ALLEN, Bull. Amer. Mus. xiii, p. 153; *A. rufspectus*, n. sp., Las Nubes, U.S. Colombia; id. t. c. pp. 153 & 154; *A. citreopygius*, figured; DUBOIS, Synopsis Avium, pl. viii, fig. 2.

Family PITTIDÆ.

Pitta vigorsi, from Dammer Isl.; HARTERT, Nov. Zool. vii, p. 18.

Family ATRICHORNITHIDÆ.

Atrichia clamosa, nest and eggs described; LE SOUËF, Ibis 1900, pp. 462 & 463.

Family HIRUNDINIDÆ.

See DUBOIS (138).

Delichon Moore vice *Chelidon* Boie [preoccupied]; OBERHOLSER, P. U. S. Mus. xxii, pp. 227 & 228.

Chelidon urbica, its life history in Russia; WAGNER, Mem. Ac. St. Petersb. (8) x, pp. 1-125, pls. i-vii.

Ptyonoprogne Reichenb. is the proper generic name for the Crag Martins, *Biblia*, being preoccupied in Lepidoptera; OBERHOLSER, P. U. S. Mus. xxii, p. 227.

Hirundo rustica, geographical distribution in Hungary during the year 1898; GAAL DE GYULA, Aquila vii, pp. 8-379, taf. 1-32: influenced by time; HEGYFOKY, t. c. pp. 380-391, taf. 33-38: note on; BERNARD, Ornith. x, p. 50: *H. neoxena*, notes on; HALL, Victorian Natural. xvii, pp. 48-52: *H. cucullata* and *H. rustica*, migration on the Congo; PETRI, Ornith. x, pp. 51 & 52.

Psalidoprocne percivali, in Mozambique; SHARPE, Ibis 1900, p. 114.

Family MUSCICAPIDÆ.

See DUBOIS (138).

Micractea assimilis and *M. pallida*, nests and eggs described; LE SOUËF, Ibis 1900, pp. 458 & 459; *M. addita*, n. sp., Mt. Mada, Buru; HARTERT, Nov. Zool. vii, p. 234; *M. viridisflava*, n. sp., S.E. New Guinea; W. ROTHSCHILD & E. HARTERT, Bull. B. O. C. xi, p. 26.

Bradyornis griseus and allies, note on; SHARPE, Ibis 1900, pp. 112 & 113; *B. kavirondensis*, n. sp., Kwa Kissero, E. Africa; NEUMANN, J. Ornith. 1900, pp. 257 & 258.

Dioptrornis trotha, n. sp., Rungwe, E. Africa; REICHENOW, Ornith. Monber. viii, p. 6.

Muscicapa grisola sibirica, n. subsp., E. Siberia; NEUMANN, J. Ornith. 1900, pp. 259 & 260; *M. filleborni*, n. sp., Rupira, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 122; *M. toruensis*, n. subsp., Toru, Equat. Africa; HARTERT, Nov. Zool. vii, p. 37.

Siphia everetti (14) and *S. beccariana* (15), figured; BÜTTIKOFER, Notes Leyden Mus. xxi, pls. 14 & 15; *S. hainana*, n. sp., Hainan; GRANT, Bull. B. O. C. x, p. xxxvi; *S. hainana*, ♂ and ♀ described; GRANT, P. Zool. Soc. London 1900, pp. 480 & 481; *S. everetti*, figured, and

- plumages described; BÜTTIKOFER, Notes Leyden Mus. xxi, pp. 192-194, pl. 14: *S. beccariana*, figured, id. t. c. pl. 15.
- Cyornis brevirostris*, n. sp., Southern Shan States; BINGHAM, Ann. Nat. Hist. (7) v, p. 359.
- Nitidula hodgsoni*, on the Larut Hills; BUTLER, J. Straits Asiat. Soc. No. 32, p. 18.
- Petrecca campbelli*, nest and eggs described; LE SOUËF, Ibis 1900, pp. 459 & 460.
- P. ambrynensis*, n. sp., Ambryn Isl., New Hebrides; SHARPE, Ibis 1900, p. 341.
- Muscicapa tricolor* ♀ Temm. = *Erythromyias dumetoria* (Wall.); FINSCH, Notes Leyden Mus. xxii, p. 197.
- Erythromyias*, sp. n. (?), Mt. Penrisen, Sarawak; SHELFORD, J. Straits Asiat. Soc. No. 33, p. 14: *E. buruensis*, figured; HARTERT, Nov. Zool. vii, p. 234, pl. iv, fig. 3.
- Poliomyias luteola*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 480.
- Dammeria henrici* ♂ ♀ fully described; HARTERT, Nov. Zool. vii, pp. 14 & 15.
- Muscicapa tricolor* ♂ Temm. = *Muscicapula hyperythra* (Blyth); FINSCH, Notes Leyden Mus. xxii, p. 199.
- Gerygone placida*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. ii, p. 3: *G. kuhni*, n. sp., Dammer Isl.; HARTERT, Nov. Zool. vii, p. 15.
- Eugerygone*, n. g., type *E. rubra* (Sharpe); FINSCH, Notes Leyden Mus. xxii, p. 200.
- Chasiempis gayi*, nest and eggs, figured; ROTHSCHILD, Avif. Laysan, pt. iii, pl. lxxxi, fig. 1.
- Metabolus rugensis*. Notes on plumages. Nests and eggs described; HARTERT, Nov. Zool. vii, pp. 4 & 5.
- Pacilodryas cyanocephala salvadorii*, n. subsp., S.E. New Guinea; W. ROTHSCHILD & E. HARTERT, Bull. B. O. C. xi, p. 26: *P. salvadorii*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 1.
- Pholia*, n. gen., type *P. hirundinea*, n. sp., Rungwe, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 99.
- Hylota marginalis*, n. sp., Lumbuti, E. Africa; id. t. c. p. 5.
- Xanthopygia narcissina* and *X. fuliginea*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 480.
- Alcippe abyssinica*, figured; SHELLEY, B. Africa, ii, pt. ii, pl. ii, fig. 1: *A. kilimensis* Shelley = *Lioptilus abyssinicus* (Rupp.); GRANT, Ibis 1900, pp. 173 & 174. [Cf. SHARPE, P. Z. S. 1884, p. 231.]
- Lioptilus galinieri* (Guer.) is a *Parisoma*; GRANT, Ibis 1900, p. 153.
- Polioltila*. Review of the genus; HELLMAYR, Nov. Zool. vii, pp. 536-538: *P. nigriceps major*, Peru: *P. nigriceps antecularis*, Colombia, nn. subspp.; id. t. c. p. 538.
- Parisoma catoleucum*, n. sp., Chamba, Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 5: *P. lugens*, from Abyssinia distinct from *P. lugens* Sharpe, nec Rüppell which = *P. jacksoni*, n. sp.; SHARPE, Bull. B. O. C. x, p. xxviii: cf. GRANT, Ibis 1900, p. 153: *Sylvia blanfordi* is a *Parisoma*; id. t. c. p. 154: notes on; GRANT, Nov. Zool. vii, p. 253.
- Chloropeta icterina*, from Mt. Kenya; SHARPE, P. Zool. Soc. London 1900, pp. 608 & 609.
- Batis molitor*, note on; ALEXANDER, Ibis 1900, pp. 89 & 90.
- Pachyprora fratrata*, n. sp., Zululand; SHELLEY, Ibis 1900, pp. 522 & 523 note.
- Platystira peltata*, from Santa Lucia Bay; WOODWARD, Ibis 1900, p. 522.
- Chenorhamphus grayi*, from the Amboernoh River, Dutch New Guinea; ROTHSCHILD, Bull. B. O. C. x, p. ci.

- Erythrocercus francisci*, probably adult of *E. livingstonei*; ALEXANDER, Ibis 1900, p. 90.
- Rhipidura devisi* nomen emend. pro *R. albicauda* De Vis nec North; DUBOIS, Syn. Av. Man. d'Orn. Fasc. iv, p. 276: *R. erromanga*, n. sp., New Hebrides; SHARPE, Ibis 1900, pp. 340 & 341.
- Myiagra oceanica*, nests and eggs described; HARTERT, Nov. Zool. vii, pp. 5 & 6.
- Cryptolopha fulvifacies*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 481: *C. cebuensis*, nomen emend. pro *C. flavigularis*, Bourns and Worcester nec Godw.-Aust.; DUBOIS, Synopsis Avium, Fasc. iv, p. 287.
- Aresia batavica* Sharpe = *A. telecophthalma* (Garn.); FINSCH, Notes Leyden Mus. xxii, p. 56.
- Pierzorhynchus reichenowi*, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 2.
- Heteranax mundus*, from Dammer Isl.; HARTERT, Nov. Zool. vii, p. 14.

Family CAMPOPHAGIDÆ.

See DUBOIS (138).

- Grauculus purus* Sharpe = *G. caeruleus* (Licht.); GRANT, Ibis 1900, pp. 171 & 172: *G. cornix*, n. sp., Aroa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 187: *G. papuensis*, nest and eggs described; LE SOUËF, Ibis 1900, p. 615.
- Pericrocotus cantoniensis*, *P. griseigularis*, and *P. cinereus*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 479.
- Lalage sharpei*, n. sp., Samoa; ROTHSCHILD, Bull. B. O. C. x, p. xl.

Family PYCNONOTIDÆ.

See DUBOIS (138).

- Cerasophaila*, n. g., type *C. thompsoni*, n. sp., Southern Shan States; BINGHAM, Ann. Nat. Hist. (7) v, pp. 358 & 359.
- Brachypodius baceanus*, n. sp., Bawean Isl., Java; FINSCH, Notes Leyden Mus. xxii, pp. 209-211.
- Criniger sordidus*, n. sp., Lower Siam; RICHMOND, P. U. S. Mus. xxii, p. 320.
- Chlorocichla occidentalis*, eggs described; ALEXANDER, Ibis 1900, p. 73.
- Phyllostrephus terrestris* Swains. (March 1837) pro *P. capensis* Swains. (July 1837); RICHMOND, Auk xvii, p. 179.
- Xenocichla flavicollis shelleyi*, n. subsp., Muansa, E. Africa; NEUMANN, J. Ornith. 1900, p. 292: *X. kakamegæ*, n. sp., Nandi, Equat. Africa; SHARPE, Bull. B. O. C. xi, p. 29.

Family TIMELIIDÆ.

See DUBOIS (138).

- Eremiornis*, n. g., type *E. carteri*, n. sp., N.W. Australia; NORTH, Victorian Natural. xvii, pp. 78 & 79, p. 93.
- Henicurus sinensis*, in Hainan; GRANT, P. Zool. Soc. London 1900, p. 474: *H. schistaceus*, on the Larut Hills; BUTLER, J. Straits Asiat. Soc. No. 32, p. 19.
- Grallina picata*, note on the nest building; LE SOUËF, Knowledge xxiii, pp. 93 & 94 cum fig.
- Drymacodus brevicauda* De Vis, an *Amalocichla*; W. ROTHSCHILD & E. HARTERT, Bull. B. O. C. xi, pp. 26 & 27.

- Trochalopterum ripponi*, n. sp., S. Shan States ; OATES, Bull. B. O. C. xi, pp. 10 & 11.
Pinarornis plumonotus, notes on ; ALEXANDER, Ibis 1900, p. 80.
Pomatorhinus stridulus, note on ; GRANT, Ibis 1900, p. 590 : *P. temporalis*, figured ; NORTH, Agric. Gaz. N. S. W. xi, pl. xv, fig. 1.
Garrulax semitorquata, n. sp., Hainan ; GRANT, B. O. C. x, p. xl ix ; id. P. Zool. Soc. London 1900, p. 475.
Crateroporus hindei, n. sp., Athi River, Brit. E. Africa ; SHARPE, Bull. B. O. C. xi, p. 29.
Scorophaenus. Review of the species ; HARTERT, Nov. Zool. vii, pp. 548 & 549 ; *S. ruficeps bakeri*, n. subsp., N. Cachar ; *S. gularis transfluvialis*, n. subsp., Cachar ; id. t. c. p. 548.
Androphilus disturbans, n. sp., Buru ; HARTERT, Nov. Zool. vii, p. 238.
Malacocincla blüttikoferi, n. sp., Borneo ; FINSCH, Notes Leyden Mus. xxii, pp. 218 & 219.
Turdinus jacksoni, n. sp., Nandi, Equat. Africa ; SHARPE, Bull. B. O. C. xi, p. 29.
Drymocataphus cinnamomeus, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 12.
Craterocelis pectoralis and *C. rufobrunnea*, nn. spp., S.E. New Guinea ; W. ROTHSCHILD & E. HARTERT, Bull. B. O. C. xi, pp. 25 & 26.
Turdinus granti, n. sp., Lower Siam ; RICHMOND, P. U. S. Mus. xxii, pp. 320 & 321.
Stachyridopsis sulphurea, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 11 : *S. ruficeps*, in Hainan ; GRANT, P. Zool. Soc. London 1900, p. 476.
Schaniopus intermedius, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 11 : *S. variegatus* STYAN = *S. genestieri* Oust. ; GRANT, Ibis 1900, p. 592.
Alcippe fratercula, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 11 : *A. kilimensis* Shelley = *A. abyssinica* ; SHELLY, B. Africa ii, Part II, p. 210, pl. ii, fig. 1.
Yuhina ampelina, n. sp., S. Shan States ; RIPPON, Bull. B. O. C. xi, p. 12.
Siva wingatei, n. sp., Yun-nan ; GRANT, Bull. B. O. C. x, p. xxxviii, Ibis 1900, p. 593.

Family MIMIDÆ.

- Orpheus montanus*, date of discovery and type locality ; COUES, Auk xvii, pp. 68 & 69.
Mimus gilvus tobagensis, n. subsp., Tobago ; DALMAS, Mem. Soc. Zool. France xiii, p. 134.
Harporhynchus curvirostris maculatus, n. subsp., Mexico ; NELSON, Auk xvii, pp. 269 & 270.

Family TROGLODYTIIDÆ.

- Thryothorus felix grandis*, n. subsp., Mexico ; NELSON, Auk xvii, p. 269.
Anorthura meligera, n. sp., Alaska ; OBERHOLSER, Auk xvii, pp. 25 & 26.
Odontorhynchus branickii minor, n. subsp., N. Ecuador ; HARTERT, Bull. B. O. C. xi, p. 400.
Pseudoxenicus, n. g., type *P. superciliaris* (Bp.) ; FINSCH, Notes Leyden Mus. xxii, pp. 213 & 214.

Family CINCLIDÆ.

Cinclus cinctus, in Saxony; NITSCHE-THARANDT, SB. Ges. Isis 1900, pp. 32-35: *C. melanogaster*, in Corsica; SAPSWORTH, Bull. B. O. C. xi, p. 12.

Family TURDIDÆ.

Monograph of the Turdidae or family of Thrushes. By HENRY SEEBOHM (edited after the author's death by R. BOWDLER SHARPE), London, 1900, 4to, pta. viii, ix, x.

Geocichla varia, nest and eggs; NOBLE, Bull. B. O. C. x, p. xlvi: *G. sibirica*, and *G. varia*, occurrence in Europe; MARTORELLI, Ornith. x, pp. 241-291: *G. papuensis*, from Aroa River, British New Guinea; ROTHSCHILD, Bull. B. O. C. x, p. xliv: *G. heinii*, nest and eggs described; LE SOUËR, Ibis 1900, p. 464: *G. dumasi*, figured; HARTERT, Nov. Zool. vii, p. 239, pl. iv, fig. 3: *G. gurneyi kilimensis*, n. subsp., Kifiniaka, Kilimanjaro; NEUMANN, J. Ornith. 1900, p. 310: *G. kirisirupa sterlingi*, n. subsp., Iringa Isl., C.E. Africa; REICHENOW, Ornith. Monber. viii, p. 5.

Hylocichla fuscescens, in Colombia; ALLEN, Auk xvii, p. 367: and *H. fuscescens salicicola*, range in North America; HOWE, Auk xvii, pp. 18-25: *H. fuscescens fuliginosa*, n. subsp., Newfoundland; id. t. c. pp. 270 & 271.

Turdus migratorius, note on the nesting; HERRICK, Auk xvii, pp. 100-103, pls. ii, iii: *T. saturatus*, *T. pelios* and allies, notes on; HARTERT, Nov. Zool. vii, p. 53: *T. obscurus*, in Italy; MARTORELLI, Avicula iv, pp. 33-35.

Merula melanaria, n. sp., S.E. New Guinea; MADARÁSZ, Ornith. Monber. viii, p. 23: *M. torquata*, notes on; FOX, Zool. 1900, pp. 1-10: *M. dubius* in Friesland; SNOOKAERT VAN SCHAUBERG, Ornith. Monber. viii, pp. 18 & 19: *M. atrigularis*, *M. obecura*, *M. ruficollis*, *M. naumannii*, *M. fuscata*, their occurrence in Europe; MARTORELLI, Ornith. x, pp. 241-291.

Myiophonus borneensis, plumages described; BüTTIKOFER, Notes Leyden Mus. xxi, pp. 258-261.

Zelodonia, an Oscine form; PYCRAFT, Bull. B. O. C. xi, p. 12.

Daulias philomela, in the Zambesi region; ALEXANDER, Ibis 1900, p. 86.

Pinarochroa ernesti, n. sp., Mt. Kenya; SHARPE, Bull. B. O. C. x, p. xxxv: note on; id. P. Zool. Soc. London 1900, pp. 606 & 607.

Erythropygia ukambensis, n. sp., Ukambani, Brit. E. Africa; SHARPE, Bull. B. O. C. xi, p. 29.

Cossypha caffra mawensis, n. subsp., Mountains of Mau, E. Africa; NEUMANN, J. Ornith. 1900, p. 309: *C. caffra iolema*, n. subsp., German East Africa; REICHENOW, Ornith. Monber. viii, p. 5: *C. heuglini*, note on; ALEXANDER, Ibis 1900, pp. 85 & 86: *C. omoensis*, n. sp., Omo River, Equat. Africa; SHARPE, Bull. B. O. C. xi, p. 28.

Thamnolæa argentata, n. sp., Ukinga, N. of Nyassa Land; REICHENOW, Ornith. Monber. viii, p. 100: *T. semirufa*, note on the plumage; GRANT, Ibis 1900, p. 170: *T. arnotti*, note on; ALEXANDER, Ibis 1900, pp. 87 & 88.

Alethe fulleborni, n. sp., Tandalla, N. of Nyassa Land; REICHENOW, Ornith. Monber. viii, p. 100: *A. poliothorax*, n. sp., Cameroons; REICHENOW, Ornith. Monber. viii, p. 6.

Monticola angolensis, in Mashonaland; MARSHALL, Ibis 1900, p. 228.

Sialia sialis, note on the nesting; HERRICK, Auk xvii, pp. 100-103, pls. ii & iii.

Ruticilla titys, at Brighton in December; BRYANT, Zoologist 1900, p. 37: in Aberdeen; SIM, Ann. Scott. Nat. Hist. 1900, p. 121: in the Solway Area; MACPHERSON, t. c. pp. 47 & 48: *R. cairei*, in Bosnia, distinct from *R. titys*; BERLEPSCH, J. Ornith. 1900, p. 127; MATSCHIE, t. c. p. 127.

Pratincola rubetra spatzii, n. subsp., Tunis; ERLANGER, J. Ornith. 1900, p. 101: *P. rubicola*, breeding in Upper Silesia; KOLIBAY, Ornith. Monber. viii, p. 81.

Tarsiger olivaceus, n. sp., Ukinga, N. of Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 100.

Saxicola oreophila nomen emend. pro *S. montana* Gould nec Koch; OBERHOLSER, P. U. S. Mus. xxii, pp. 221 & 222: *S. semenowi*, n. sp., Eastern Persia; BIANCHI & ZARUDNY, Annaire Mus. St. Petersb. v, pp. 187-189: *S. pileata albinotata*, n. subsp., Ssero, North-west Masailand; NEUMANN, J. Ornith. 1900, p. 313.

Family SYLVIIDÆ.

Sylvia nisoria, in Lincolnshire; CATON HAIGH, Knowledge xxii, No. 170, p. 278.

S. atricapilla, in Perthshire in December; DAVIDSON, Ann. Scott. Nat. Hist. 1900, p. 121: *S. subalpina leucopogon* (Heckel), in Tunis; ERLANGER, J. Ornith. 1900, p. 102: *S. blanfordi* is a *Parisoma*; GRANT, Ibis 1900, p. 154: id. Nov. Zool. vii, p. 253: *S. provincialis*, notes on; HUDSON, Humane Review, April 1900, pp. 28-38.

Phylloscopus rufus, in Barra; MAGGILLIVRAY, Ann. Scott. Nat. Hist. 1900, p. 121: near Edinburgh; CLARKE, t. c. p. 183: in the Clyde district; PATERSON, t. c. p. 246: *P. rufus sylvestris* Meissner, notes on this and other species of *Phylloscopus*; PARROT, J. Ornith. 1900, pp. 455-458: *P. subaffinis*, n. sp., S.W. Kwei-chu, China; GRANT, Bull. B. O. C. x, p. xxxvii: described; id. Ibis 1900, pp. 585 & 586.

Oreopneuste davidi, n. sp., Western China; BEREZOWSKI & BIANCHI, Annaire Mus. St. Petersb. v, p. 211 := *P. bianchii* [nomen emend. pro *Oreopneuste davidi* Berezow. & Bianchi nec Swinh.]

Hypoleais polyglotta, in Sussex; BUTTERFIELD, Ibis 1900, pp. 569 & 570, Zoologist 1900, p. 518.

Acrocephalus inexpectatus, n. sp., Western China; BEREZOWSKI & BIANCHI, Annaire Mus. St. Petersb. v, pp. 210 & 211: *A. syrix*, nests and eggs described; HARTERT, Nov. Zool. vii, pp. 3 & 4.

Tatara vaughani, n. sp., Pitcairn Isl.; SHARPE, Bull. B. O. C. xi, p. 2. *Locustella naevia*, nesting in Morayshire; MACKESSACH, Ann. Scott. Nat. Hist. 1900, p. 48.

Lusciniola gracilirostris, notes on; ALEXANDER, Ibis 1900, p. 81.

Cettia bivittata, n. sp., Timor; FINSCH, Notes Leyden Mus. xxii, p. 209.

Bradypterus castaneus, n. sp., Cameroons; REICHENOW, Ornith. Monber. viii, p. 6: *B. salvatori*, n. sp., Gurui and Kilimanjaro; NEUMANN, J. Ornith. 1900, p. 304.

Apalis aquatorialis, n. sp., Angata anyuk, E. Africa; id. t. c. p. 307: *A. porphyrolæma* (1) and *A. griseiceps*, figured; id. t. c. Taf. II.

Euprinodes hildegardæ, note on; SHARPE, Ibis 1900, pp. 497 & 498.

Sylviella, review of the genus: *S. whytei*, notes on: *S. flecki*, n. sp., S. of Lake N'gami: *S. karnapi*, n. sp., E. Cameroons district: *S. fischeri*, n. subsp., Malindi, E. Africa: *S. pallida*, notes on; REICHENOW, Ornith. Monber. viii, pp. 21 & 22: *S. brachyura* Lafr. is distinct from *S. micrura* (Rüpp.); GRANT, Ibis 1900, pp. 154 & 155: *S. minima*, n. sp., Manda Island, E. Africa; id. t. c. p. 156: key to the species; id. t. c. pp. 156 & 157: *S. jacksoni* Sharpe = *S. whytei*.

- Shelley; id. t. c. p. 155: *S. baraka* Sharpe = *S. virens* (Casa.); id. t. c. p. 156: *S. major*, n. sp., Usandawe, E. Africa; NEUMANN, J. Ornith. 1900, p. 306: *S. pallida* and *S. minima*, figured; ALEXANDER, Ibis 1900, pl. i, figg. 1 & 2.
Prinia mystacea, nest and eggs described; MARSHALL, Ibis 1900, p. 231.
Burnea brunneiceps, n. sp., Rupira, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 122: *B. gracilis*, its flight; ROTHSCHILD, Bull. B. O. C. x, p. c.
Cisticola aridula, n. sp., White Nile, 60 miles below Khartoum; WITHERBY, Bull. B. O. C. xi, p. 13: *C. ambigua*, n. sp., Mau, Brit. E. Africa; SHARPE, t. c. p. 28: *C. levata*, n. sp., Abyssinia; GRANT, Ibis 1900, p. 161: *C. prinioides*, n. sp., Mountains of Mau, E. Africa; NEUMANN, J. Ornith. 1900, p. 304: *C. terrestris*, nest and eggs described; MARSHALL, Ibis 1900, pp. 231 & 232.
Acanthiza tenuirostris, n. sp., Leigh Creek, Victoria; ZIETZ, Tr. R. Soc. S. Austral. xxiv, p. 112.
Sericornis frontalis, nest and eggs described; LE SOUËF, Victorian Natural. xvii, pp. 145 & 146.
Smicromys flavescentis, nest and eggs described; id. Ibis 1900, pp. 461 & 462.
Malurus cyaneus and allies, notes on; HALL, Victorian Natural. xvi, pp. 135-141, xvii, pp. 41 & 42: *M. gouldii* and *M. cyaneus*, notes on the plumage; id. P. Soc. Victoria (2) xii, p. 59.

Family ARTAMIDÆ.

- Artamus superciliosus*, *A. personatus*, and *A. sordidus*, notes on the nesting; HALL, J. Agric. W. Austral. ii, pp. 388-397 cum figg.

Family VIREONIDÆ.

- Vireo perquisitor*, n. sp., S. Mexico; NELSON, Auk xvii, pp. 267 & 268: *V. amauronotus strenuus*, n. subsp., Mexico; id. t. c. p. 268.
Hylophilus brunneus, n. sp., Las Nubes, U. S. Colombia; ALLEN, Bull. Amer. Mus. xiii, p. 171: *H. pallidifrons*, n. sp., Tobago; DALMAS, Mem. Soc. zool. France xiii, pp. 135 & 136.
Vireolanius mikettæ, n. sp., N. Ecuador; HARTERT, Bull. B. O. C. xi, p. 38.

Family PRIONOPIDÆ.

- Rhectes phaecephalus*, n. sp., Baillala River, and *R. nigrescens schistaceus*, Arosa River, S.E. New Guinea; REICHENOW, Ornith. Monber. viii, p. 187.
Collyriocincla pallidirostris, nest and eggs described; LE SOUËF, Victorian Natural. xvii, p. 145.
Pinaroloxias dissimilis, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 2.

Family LANIIDÆ.

- Cracticus rufescens* De Via, probably distinct from *C. quoyi*; ROTHSCHILD, Bull. B. O. C. x, p. xl.
Artamia comorensis, figured; SHELLY, B. Africa ii, Part i, pl. ii, fig. 1.
Telephonus reichenovi, n. sp., East Africa; NEUMANN, J. Ornith. 1900, p. 120: *T. percivali*, n. sp., S. Arabia; GRANT, Bull. B. O. C. x, p. l.

- Bocagia potteri*, n. sp., Upper Nile; OUSTALET, Bull. Mus. Paris 1900, pp. 225 & 226.
- Dryoscopus nandensis*, n. sp., Nandi, Equat. Africa; SHARPE, Bull. B. O. C. xi, p. 28: *D. fülleborni*, n. sp., Usufua, N. of Nyasa Lake; REICHENOW, Ornith. Monber. viii, p. 39.
- Laniarius mossambicus* Fischer & Reichenow = *L. aethiopicus picatus* Hartl.; NEUMANN, J. Ornith. 1900, p. 271.
- Pachycephala melanura dammeriana*, n. subsp., Dammer Isl.; HARTERT, Nov. Zool. p. 17: *P. arctitorquis*, from Dammer Isl.; id. t. c. p. 17: *P. gutturalis*, notes on; HALL, Victorian Natural. xvii, pp. 52-54: *P. intacta*, n. sp., Malicolo and Espiritu Santo, New Hebrides; SHARPE, Ibis 1900, p. 343: nest and eggs described; FARQUHAR, t. c. p. 611: *P. examinata* and *P. griseonota*, notes on; HARTERT, Nov. Zool. vii, p. 236: *P. peninsulae*, nest and eggs described; LE SOUËF, Victorian Natural. xvii, p. 146.
- Lanius excubitor homeyeri*, note on; JOHANSEN, Ornith. Jahrb. xi, pp. 28-34: *L. eleagni*, note on; SUSCHKIN, Bull. B. O. C. xi, p. 5: *L. raddei*, in East Africa; NEUMANN, J. Ornith. 1900, p. 120: *L. reichenowi*, remarks on; id. t. c. p. 266.

Family SITTIDÆ.

- Sitta europaea britannica*, n. subsp., England; notes on the European species of *Sitta*; HARTERT, Nov. Zool. vii, p. 626: *S. whiteheadi*, note on; SAPSWORTH, Bull. B. O. C. xi, p. 12: *S. yunnanensis*, n. sp., Yun-nan; GRANT, op. cit. x, p. xxvii: type fully described; id. Ibis 1900, p. 582: *S. magna*, note on; id. t. c. p. 583.

Family PARIDÆ.

Notes on the Tits of Germany (Die deutschen Meisen); BRAUN, Ornith. Monber. viii, pp. 130-135.

- Parus transcaspius*, n. sp., Transcaspian; ZARUDNY, Mem. Ac. St. Petersb. (8) x, p. 203: *P. fülleborni*, n. sp., Undis, E. Africa; REICHENOW, Ornith. Monber. viii, p. 5: *P. nigriloris*, n. sp., Ishigaki, S. Liu Kiu Is.; HELLMAYR, t. c. viii, p. 139: *P. communis italicus*, n. subsp., Tuscany; TSCHUBI & HELLMAYR, Ornith. Jahrb. x, p. 204: *P. montanus kleinschmidti*, n. subsp., England; HELLMAYR, t. c. p. 212: *P. major*, nesting habits; STEELE-ELLIOTT, Zoolologist 1900, pp. 423 & 424: *P. afer*, in Northern Rhodesia; SCLATER, P. Zool. Soc. London 1900, p. 3: *P. salicarius kleinschmidti*, in the south of England; HARTERT, Bull. B. O. C. xi, p. 27: *P. nigricinereus* Jackson = *P. funereus*; SHELLY, B. Africa ii, Part II, p. 227: *P. albiventris* and *P. xanthostomus*, figured; id. t. c. pl. x, figg. 1 & 2: *P. masukuensis*, n. subsp., Masuku range and Nyika plateau, Nyasaland; id. t. c. p. 238: *P. baraka* Jackson = *P. thruppi*; id. t. c. p. 244: *P. cristatus* and *P. salicarius*, and allied forms, notes on; KLEINSCHMIDT, Ornith. Monber. viii, p. 168: *P. rhenanus*, n. sp., Rhine Provinces, id. t. c. p. 168: *P. rufescens barlowi*, n. subsp., Coast range of California, S. of San Francisco; GRINNELL, Condor ii, p. 127.

- Pæcile salicaria neglecta*, n. subsp., Pleskaw, N.W. Russia; ZARUDNY & HÄRMS, Ornith. Monber. viii, p. 19: *P. s. bianchii*, nom. emend.; iid. t. c. p. 67.

- Acredula*, notes on the species in Germany; Kleinschmidt t. c. pp. 167 & 168: *A. dorsalis* and *A. senex*, n. spp., Caucasus; MADARASZ, Termes. Fuzetek xxiii, pp. 198-203, Tab. vii, figg. 1 & 2.

- Ægithalus*, remarks on; HELLMAYR, J. Ornith. 1900, p. 372: *Æ. musculus*, figured; SHELLY, B. Africa ii, Part II, pl. 11, fig. 2.

Aegithaliscus pulchellus, n. sp., S. Shan States; RIPPON, Bull. B. O. C. xi, p. 11.

Panurus biarmicus, notes on; GURNEY, Zoolist 1900, pp. 358-374, pl. v, map; RIDSDALE, t. c. p. 422; NOBLE, t. c. p. 423; MACPHERSON, t. c. p. 478; *P. biarmicus*, figured; BONHOTTE, Avicul. Mag. vi, pp. 213-216, pl. iii.

Family ZOSTEROPIDÆ.

Zosterops macgillivrayi, n. sp., Malicolo and Api Is., New Hebrides; SHARPE, Ibis 1900, pp. 345 & 346; *Z. ratensis* Tristram = *Z. griseonota* Gray; id. t. c. p. 346; *Z. semperi owestoni*, n. subsp., Ruk Isl., Carolines, nest and eggs described; HARTERT, Nov. Zool. vii, pp. 2 & 3; *Z. natalis*, figured; SHARPE, Monogr. Christmas Is. p. 49, pl. vi; *Z. neglecta* Seebold = *Z. palpebroa* (Temm.); GRANT, P. Zool. Soc. London 1900, p. 469; *Z. buruensis*, notes on; HARTERT, Nov. Zool. vii, p. 237; *Z. obtinatus*, n. sp., Batchian; id. t. c. p. 238; *Z. modesta*, figured; SHELLY, B. Africa ii, Part i, pl. vi, fig.; *Z. semilavata*, figured; id. t. c. pl. vi, fig. 2; *Z. pallida* (1), *Z. andersoni* (2), *Z. rirens* (3), figured; id. t. c. pl. vii: *Z. ficedulina*, figured; id. t. c. Part II, pl. viii, fig. 1; *Z. comorensis*, n. sp., Comoro Is.; id. t. c. p. 196, pl. ix, fig. 1; *Z. demeryi* Büttikofer = *Z. senegalensis*; id. t. c. p. 173; *Z. obsoleta* Büttikofer = *Z. senegalensis*, id. l. c.; *Z. stuhlmanni* Reichenow, *Z. flavilateralis* Reichenow, and *Z. superciliosa* Reichenow = *Z. senegalensis*; id. l. c.; *Z. angaziae* Milne-Edwards & Oustalet = *Z. kirki*; id. t. c. p. 178; *Z. perpicillata* Shelley = *Z. eurycricota*; id. t. c. p. 182; *Z. scotti* Neumann = *Z. jacksoni*; id. t. c. p. 184; *Z. atmorei* Sharpe = *Z. capensis*; id. t. c. p. 188; *Z. gloriose* Ridgway = *Z. madagascariensis*; id. t. c. p. 194.

Malacirops c-neutoni, figured; id. t. c. pl. ix, fig. 2.

Spiroeps leucophaea, figured; id. t. c. pl. viii, fig. 2.

Tephritis ruki, notes on; HARTERT, Nov. Zool. vii, p. 3.

Family DICÆIDÆ.

Dicaeum arfakianum, n. sp., Arfak Mts., New Guinea; FINSCH, Notes Leyden Mus. xxii, p. 70; *D. flammeeum*, in South Borneo; BüTTIKOFER, Notes Leyden Mus. xxi, p. 211 note.

Pardalotus punctatus, *P. assimilis*, and *P. ornatus*, nests described; HALL, J. Agric. W. Austral. ii, pp. 324-329 cum fig.; *P. assimilis* Ramsay = *P. affinis* Gould; id. Victorian Natural. xvii, p. 19 & 20; field notes on a phase of; id. t. c. pp. 20-22, with figure of nest and eggs: said to be foster-parent to a Cuckoo; id. t. c. pp. 40 & 41; *P. punctatus*, figured; BUTLER, Avicul. Mag. vi, pp. 165-167, pl. ii.

Family NECTARINIIDÆ.

Nectarinia takazze unisplendens, n. subsp., Kifinika, Kilimanjaro; NEUMANN, J. Ornith. 1900, p. 300; *N. subfamosa* Salvadori and *N. cuneigularis* Sharpe = *N. cupreonitens*; SHELLY, B. Africa ii, p. 21; *N. deckeni* Höhnel = *N. johnstoni*; id. t. c. p. 22; *N. melanogastra*, figured; id. t. c. pl. i, fig. 2; *N. jacksoni* Neumann = *N. tacazze*; id. t. c. p. 26; *N. kilimensis*, figured; id. t. c. pl. i, fig. 1; *N. gadovi* Bocage = *N. kilimensis*; id. t. c. p. 28.

Ethopyga anomala, n. sp., Lower Siam; RICHMOND, P. U. S. Mus. xxii, p. 319.

Cinnyris chloropygia and its allies; HARTERT, Nov. Zool. vii, p. 51: *C. venusta* and allies, note on; SHARPE, Ibis 1900, pp. 495-497: *C. verticalis*, in Uhehe, C. E. Africa; REICHENOW, Ornith. Monber. viii, p. 4: *C. frenata*, nest and eggs described; ROBINSON & LAVEROCK, Ibis 1900, p. 633: *C. gutturalis*, nest and eggs described; MARSHALL, t. c. p. 236: *C. gutturalis inaequata*, n. subsp., East Africa; HARTERT in Ansorge's 'Under the African Sun' App. p. 351: *C. g. damarenis* Reichenow = *C. g. inaequata*; HARTERT, Nov. Zool. vii, p. 51: *C. scioana* (Salvad.) = *C. cruentata* (Rupp.); GRANT, Ibis 1900, p. 144: *C. castaneiventris* Madarasz = *C. eboensis* Jard.; HARTERT, Nov. Zool. vii, p. 50: *C. chalceus* Büttikofer = *C. cupreus*; SHELLY, B. Africa ii, Part i, p. 36: *C. nesophilus*, figured; id. t. c. pl. 2, fig. 2: *C. falkensteinii*, figured; id. t. c. pl. 3, fig. 1: *C. eriksoni* Trimen = *C. ludoviciensis*; id. t. c. p. 74: *C. mediocris*, figured; id. t. c. p. 79: *C. ansorgii* Hartert = *C. reichenowi*; id. t. c. p. 82: *C. sulleborni*, figured; id. t. c. pl. iv, fig. 1.

Chalcomitra senegalensis lamperti (Reichenow) = *C. senegalensis*; id. t. c. p. 91: *C. gutturalis inaequata* (Hartert) = *C. gutturalis*; id. t. c. p. 93: *C. scioana* Salvadori = *C. cruentata*; id. t. c. p. 100: *C. bradshawi* Sharpe = *C. deminuta*; id. t. c. p. 105: *C. scapulatus* (Rochebrune) = *C. fuliginosa*; id. t. c. p. 109.

Elaeocerthia Fischeri (Reichenow) = *E. verreauxii*; id. t. c. p. 116: *E. thomensis*, figured; id. t. c. pl. 5, fig. 2.

Cyanomitra ragazzi (Salvadori) = *C. obscura*; id. t. c. p. 125: *C. bohndorffii* (Reichenow) and *C. viridisplendens* (Reichenow) both = *C. verticalis*; id. t. c. p. 127: *C. newtoni*, figured; id. t. c. pl. 5, fig. 1: *C. obscura neglecta*, n. subsp., Kibuesi, E. Africa; NEUMANN, J. Ornith. 1900, p. 297.

Anisognathus orientalis, figured; SHELLY, Birds Africa ii, pl. 4, fig. 2.

Family MELIPHAGIDÆ.

Myzomela albicula, figured; HARTERT, Nov. Zool. vii, pl. iv, fig. 1.

Melithreptus albicularis, nest and eggs described; LE SOUËF, Ibis 1900, p. 463.

Glyciphila subocularis, nest and eggs described; id. t. c. pp. 463 & 484: *G. squamata*, from Dammer Isl.; HARTERT, Nov. Zool. vii, pp. 16 & 17.

Entomophila picta, nest and eggs described; NORTH, Victorian Natural. xvii, p. 127.

Ptilotis proxima, n. sp., German New Guinea; MADARASZ, Ornith. Monber. viii, p. 3: *P. gracilis*, nest and eggs described; LE SOUËF, Ibis 1900, pp. 615 & 616.

Entomyza cyanotis harterti, n. subsp., North Queensland; ROBINSON & LAVEROCK, Ibis 1900, p. 635.

Philemon argenteiceps, eggs described; LE SOUËF, Ibis 1900, pp. 460 & 461: *P. nove guineæ*, nest and eggs described; id. t. c. pp. 613-615, fig. 2.

Moho nobilis, figured; ROTHSCILD, Avif. Laysan, Part III, pl. lxxii: *M. apicalis*, pl. lxxiii: *M. bishopi*, pl. lxxiv: *M. braccatus*, pl. lxxv.

Chaetoptila angustipluma, figured; id. t. c. pl. lxxi.

Family CERTHIIDÆ.

Certhia familiaris and its allies; HARTERT, Nov. Zool. vii, p. 525: notes on; KLEINSCHMIDT, Ornith. Monber. viii, p. 169: *C. rhenana*, n. sp., Rhine Provinces; id. t. c. p. 169.

Climacteris weiskei, n. sp., N. Queensland; REICHENOW, Ornith. Monber. viii, p. 187.

Family MNIOTILTIDÆ.

Dendroica discolor and *D. kirtlandi*, near Toronto; SAMUEL, Auk xvii, p. 391: *D. striata*, *D. castanea*, *D. cerulescens*, *D. blackburniae*, in Colombia; ALLEN, t. c. pp. 366 & 367: *D. cerulea*, nesting habits; SAUNDERS, t. c. pp. 358-362: *D. achrusteria*, nomen emend. pro *D. bahamensis* Maynard nec Cory; BANGS, t. c. p. 292.

Geothlypis trichas and subspecies; PALMER, Auk xvii, pp. 216-242: *G. trichas modestus*, n. subsp., Mexico; NELSON, t. c. p. 269: *G. trichas ignota*, its proper name; CHAPMAN, t. c. p. 389: *G. agilis* and *G. trichas*, in Colorado; AIKEN, t. c. p. 298: *G. cucullata* (Lath.) vice *G. velata* (Vieill.); *G. nelsoni* nomen emend. pro *G. cucullata* Salv. & Godm.; RICHMOND, t. c. p. 179: *G. maynardi*, n. sp., Bahamas; BANGS, t. c. pp. 290 & 291.

Basileuterus belli scitulus, n. subsp., Highlands of Chiapas and Guatemala; NELSON, Auk xvii, p. 268.

B. conspicillatus Salvin & Godman = *B. cinereicollis* Sclater; ALLEN, Bull. Amer. Mus. xiii, pp. 175 & 176.

Wilsonia canadensis, in Colorado; AIKEN, Auk xvii, p. 298.

Family MOTACILLIDÆ.

Motacilla nigricotis, [potuus melanotis] n. sp., Orange river and Limpopo, S. Africa; SHELLY, B. Africa ii, Part II, pp. 266-268, pl. 12, fig. 2: *M. vidua*, figured; id. t. c. pl. 12, fig. 1: *M. borealis* and *M. cinereicapilla* are subspecies of *M. flava*; id. t. c. pp. 286 & 287: *M. melanocephala* Licht. has priority over *M. feldeggii* Michah.; id. t. c. p. 291: *M. boarula schmitzi*, n. subsp., Madeira; TSCHUSI, Ornith. Jahrb. xi, p. 223: *M. raii*, at Beauly; HINXMAN, Ann. Scott. Nat. Hist. 1900, p. 48.

Anthus lineiventris, in N. Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 4.

A. *crenatus*, figured; SHELLY, B. Africa ii, Part II, pl. 13, fig. 2: *A. calthorae*, figured; id. t. c. pl. 14, fig. 1: *A. brachyurus*, fig. 2: *A. melinda*, n. sp., Melinda, E. Africa; id. t. c. pp. 305 & 306: *A. gouldi* Fraser is a subspecies of *A. pyrrhonotus* (Vieill.); id. t. c. p. 307: *A. lineiventris*, figured; id. t. c. pl. 13, fig. 1: *A. vaalensis*, n. sp., Northern Natal and Transvaal; id. t. c. p. 311: *A. cockburniae* Oates = *A. sordidus*; id. t. c. p. 314: *A. rufulus canarooneensis*, n. subsp., Camaroons; id. t. c. p. 320: *A. spiolella*, in Sussex; TICEHURST, Zoologist 1900, p. 278.

Macronyx fulleborni, n. sp., Unika Land, N. of Lake Nyasa; REICHENOW, Ornith. Monber. viii, p. 39.

Family ALAUDIDÆ.

Pseudalaemon delamerei, n. sp., Athi River, British East Africa; SHARPE, Bull. B. O. C. x, p. cii.

Otocoris alpestris praticola, nesting in Maine; SWAIN, Auk xvii, pp. 387 & 388: *O. balcanica*, specimens exhibited; ROTHSCHILD, Bull. B. O. C. x, p. lxxi.

Tephrocorys cinerea and its allies; HARTERT, Nov. Zool. vii, p. 47.

Spirocorys aethiopsis, n. sp., Athi River, British East Africa; SHARPE, Bull. B. O. C. x, p. ci.

Mirafra africana and its allies; HARTERT, Nov. Zool. vii, pp. 45 & 46: *M. a. transvaalensis*, n. subsp., Transvaal; id. t. c. p. 45: *M. a. tropicalis*, n. subsp., Tropical E. Africa; id. t. c. p. 45: *M. a. atki*,

- n. subsp., Athi Plain, British E. Africa; id. t. c. p. 46: *M. cinnamomea*, notes on; id. t. c. p. 46: *M. nigrescens*, n. sp., Elton Pass, N. of Konde Land; REICHENOW, Ornith. Monber. viii, p. 39.
Ammomanes saturatus, n. sp., Southern Arabia; GRANT, Nov. Zool. vii, p. 249.
Pyrrhulauda harrisoni, n. sp., Lake Rudolf, Equat. Africa; id. Bull. B. O. C. xi, pp. 30 & 31.

Family FRINGILLIDÆ.

- Perissospiza* nomen emend. pro *Pycnorhamphus* Hume nec Rosenberg; OBERHOLSER, P. U. S. Mus. xxii, p. 227.
Chloridops kona, figured; ROTHSCHILD, Avif. Laysan, Part III, pl. lxx.
Astragalinus tristis pallidus, in Colorado; AIKEN, Auk xvii, p. 298.
Linaria, notes on various species; DEICHLER, J. Ornith. 1900, pp. 371 & 372.
Acanthis cannabina, in Westchester County, New York; THAYER, Auk xvii, pp. 388 & 389.
Cannabina cannabina minor, note on; TSCHUSI, Ornith. Jahrb. xi, p. 223.
Montifringilla altaica (Eversmann, 1848) has priority over *M. sordida* (Stoliczka); OBERHOLSER, P. U. S. Mus. xxii, p. 225.
Leucosticte kadiaka, n. sp., Kadiak Isl., Alaska; McGREGOR, Condor iii, No. 1.
Rhyncostruthus percivali, n. sp., S. Arabia; GRANT, Bull. B. O. C. xi, p. 30.
Passer domesticus, note on the sexual differences; BUTLER, Zoologist 1900, pp. 74 & 75: nesting habits; STEELE-ELLIOTT, t. c. p. 424: READ, t. c. p. 519: *P. rutilans*, eggs described; LA TOUCHE, Ibis 1900, p. 35: *P. diffusus* and allies, notes on; HARTERT, Nov. Zool. vii, pp. 43-45: *P. gongonensis* Oust, a large form of *P. swainsoni*; id. t. c. pp. 44 & 45: *P. motitensis* and allies; id. t. c. pp. 42 & 43.
Linurgus kilimensis, figured; NEUMANN, J. Ornith. 1900, Taf. II, fig. 3.
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Amphispiza bilineata pacifica, n. subsp., Mexico; NELSON, Auk xvii, p. 267.
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Pipilo maculatus fuscifer, n. subsp., San Francisco Bay Region; McGREGOR, Condor ii, p. 43.
Zamelodia melanoccephala microrhyncha, n. subsp., Pacific coast region of California, Oregon and Washington; GRINNELL, Condor ii, p. 128.
Phrygilus princeps, n. sp., Patagonia; SCOTT, Bull. B. O. C. x, p. lxiv.

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- Drepanidae*, a key to the genera; ROTHSCHILD, Avif. Laysan, Part III, p. 211.
Heterorhynchos lucidus, figured; id. t. c. pl. liii.
Hemignathus ellianus, figured; id. t. c. pl. xlvi.
Drepanorhamphus, n. g., type *D. funereus* (Newton); id. t. c. pp. 163–165, pl. lxii.
Drepanis pacifica, figured; id. t. c. pl. lxi.
Palmeria dolei, figured; id. t. c. pl. lx.
Chlorodrepanis, n. g. [for *Himatione* Cab., part], type *C. stejnegeri* (Scott Wilson); id. t. c. p. 131: key to the species of the genera *Himatione* and *Chlorodrepanis*; id. t. c. p. 131.
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Loxops coccinea, figured; id. t. c. pl. lxii, figg. 1–4: *L. ochracea*, pl. lxiv: *L. rufa*, pl. lxv: *L. caeruleirostris*, pl. lxvi: *L. wolstenholmei* = *L. rufa* (Bloxam); id. t. c. p. 177.
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- Dacnis berlepschi*, n. sp., N.W. Ecuador; HARTERT, Bull. B. O. C. xi, p. 37.

Family TANAGRIDÆ.

- Calliste emiliae*, n. sp., Buenaventura, U. S. Colombia; DALMAS, Bull. B. O. C. xi, p. 35: *C. johannae*, n. sp., Buenaventura, Colombia; id. t. c. p. 36: from N. Ecuador (Paramba); HARTERT, t. c. p. 40.
Tanagra berlepschi, n. sp., Tobago; DALMAS, Mem. Soc. zool. France xiii, pp. 136 & 137.
Buarremon simoni, n. sp., Loja, Ecuador, *B. pallidiceps*, n. sp., Oña, Ecuador; SHABPE, Bull. B. O. C. xi, p. 2.
Buarremon assimilis, young in first plumage described; ALLEN, Bull. Amer. Mus. xiii, p. 167.

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Penthetria peamacromia, n. sp., Ukinga, N.E. of Nyasa Land; REICHENOW, Ornith. Monber. viii, p. 39.
Lagonosticta conica, in Abyssinia; GRANT, Ibis 1900, p. 127.
Sporaginthus margarita, figured; id. t. c. pl. iii, fig. 1 = *Estrellda ochro-gaster* Salvad.; id. t. c. p. 304 note; SALVADORI, t. c. p. 399.
Poephila hecki, n. sp., Australia; HEINROTH, Ornith. Monber. viii, pp. 22 & 23: id. J. Ornith. 1900, p. 248: *P. nigrotecta*, nest and eggs described; LE SOUËF, Ibis 1900, p. 461: *P. acuticauda*, figured; SETH-SMITH, Avicul. Mag. vi, pp. 257–259, pl. iv: *P. personata*, figured; PHILLIPPS, Avicul. Mag. vi, pp. 259–262, pl. iv.
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- Patridge oryzivora*, n. sp., Maputasi, Mozambique; SHARPE, Ibis 1900, p. 110; *E. delamerica*, n. sp., Athi River, British East Africa; id. BULL, R. O. C. I., p. cii; *E. variegata*, n. sp., Ucheke, E. Africa; REICHESOW, Ornith. Monber. viii, p. 49.
- Anisognathus rufogularis*, n. sp., China, Nyasaland; SHELLY, B. Africa ii, Part II, p. 341.
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- Melanopareia weynsi*, n. sp., Upper Congo; DUBOIS, Ornith. Monber. viii, p. 69.
- Brachypteryx*, n. g. type *B. anomala*, n. sp., E. Africa; REICHESOW, J. Ornith. 1900, p. 249.
- Placens falleborni*, n. sp., Rupira, N. of Lake Nyasa; id. Ornith. Monber. viii, p. 99; *P. anomala*, notes on; HARTERT, Nov. Zool. vii, p. 40; *P. mangar* Horsf., natural history, structure of nests; ZEHNTNER (579); *P. rufledgii* and *P. megarkynchus*, notes on the plumage; FINN, Aviculit. Mag. vi, pp. 145-147.

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- Calothorax eucurus assimilis*, n. subsp., Mexico; NELSON, Auk xvii, p. 266.
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- Oriolus rolleri* and *O. luteus*, notes on; HARTERT, Nov. Zool. vii, pp. 38 & 39; *O. meneteki*, figured; GRANT, Ibis 1900, pl. ii = *O. monachus* juv.; SALVADORI, t. c. p. 398; cf. also GRANT, t. c. pp. 565-567.
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Family DICRURIDÆ.

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Buchanga assimilis, nest and eggs described; MARSHALL, Ibis 1900, pp. 224 & 225.
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Family EULABETIDÆ.

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IV. REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER, F.R.S.

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Stenodactylus lumadensis, Blgr. Note by NIKOLSKI, t. c. p. 388.
Tropiocolotes nattereri, sp. n., STEINDACHNER, Denk. Ak. Wien lxix, p. 326, pl. i, fig. 2, Gulf of Akaba.
Bunopus tuberculatus, Blanf. Note by NIKOLSKI, t. c. p. 387.
Gymnodactylus sagittifer, p. 379, *kirmanensis*, p. 381, *agamuroides*, p. 384, pl. xx, fig. 1, and *zarudnyi*, p. 385, pl. xx, fig. 2, spp. nn., NIKOLSKI, t. c., Persia; *G. louisadensis*, De Vis, redescribed by LÖNNBERG, Ann. Nat. Hist. (7) vi, p. 575.
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Phyllodactylus stumpffi, Btg., and *pictus*, Ptrs. Notes by MOCQUARD, Bull. Soc. Philom. (9) ii, pp. 101 & 103; *P. brevipes* and *bastardi*, spp. nn., id. ibid. pp. 99 & 101, pl. ii, figg. 5 & 6, Madagascar.
Diplodactylus wolterstorffi, sp. n., TORNIER, Zool. Jahrb. Syst. xiii, p. 584, fig., Tanga, German E. Africa.
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UROPLATIDÆ.

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Uroplates fimbriatus, Schn. Note on its arboreal habits: MOCQUARD, Bull. Soc. Philom. (9) ii, p. 104.

AGAMIDÆ.

Draco, L. Remarks on the specimens preserved in the Dresden Museum: WANDOLLECK, Abh. Mus. Dresden ix, no. 3; *D. rizali*, sp. n., id. ibid. p. 15, pl. —, figg. 6 & 17, Mindanao; *D. whiteheadi*, sp. n., BOULENGER, P. Z. S. 1899, p. 956, pl. lxvi, fig. 1, Hainan; *D. punctatus* and *formosus*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, pp. 189 & 190, Perak.

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Aphanotis floweri, sp. n., WERNER, t. c. p. 486, Singapore (?).

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Uromastix ornatus, Heyden. Described and figured by STEINDACHNER, Denk. Ak. Wien lxix, p. 328, pl. i, fig. 1.

IGUANIDÆ.

Anolis agassizi, p. 161, pl. —, Malpelo Id., Pacific Ocean, off Colombia, and *townsendi*, p. 163, Cocos Id., Pacific Ocean, off Costa Rica, spp. nn., STEJNEGER, Bull. Mus. Harvard xxxvi.

Banisia guttulatus, Cope. Note by McLAIN, Contrib. Neotrop. Herpetol. p. 1 (1899).

Hoplurus grandidieri, sp. n., MOCQUARD, Bull. Soc. Philom. (9) ii, p. 105, Madagascar.

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Tropidurus thomasi, sp. n., BOULENGER, t. c. p. 184, Coast of Peru.

Sceloporus graciosus, B. & G., and *occidentalis*, B. & G. Notes by McLAIN, Critic. Notes Coll. W. Coast U.S., p. 3 (1899).

ANGUIDÆ.

Ophisaurus apus, Pall. Notes on the habits by G. SCHNEIDER, Zool. Garten xli, p. 117; *O. ventralis compressus*, subsp. n., COPE, Rep. U. S. Mus. f. 1898, p. 501, fig., South Carolina.

Diploglossus bakeri, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 193, Jamaica.

HELODERMATIDÆ.

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VARANIDÆ.

Tararus hofmanni, Roger (foss.). Vertebra figured by ROGER, Ber. Ver. Augsburg xxxiv, pl. iii, figg. 12-14.

TEIIDÆ.

Cnemidophorus stejnegeri, Van Denb. = *C. undulatus*, Hallow.: McLAIN, Critic. Notes Coll. W. Coast U.S. p. 9 (1899); *C. tessellatus ethiopicus*, subsp. n., COPE, Rep. U. S. Mus. f. 1898, p. 582, Sonora.

Neusticurus rufus, sp. n., BOUTLENGER, Tr. Linn. Soc. London (2) viii, p. 53, pl. v, fig. 1, Mt. Roraima, Brit. Guiana.

Prionodactylus leucostictus, sp. n., BOUTLENGER, t. c. p. 54, pl. v, fig. 2, Mt. Roraima, Brit. Guiana.

Anadias bogotensis, Ptrs. Note by WERNER, Verh. Ges. Wien I, p. 267.

Oreosaurus stridulus, Ptrs. Note by WERNER, I. c.

Proctoporus ventrimaculatus, sp. n., BOUTLENGER, Ann. Nat. Hist. (7) vi, p. 185, Andes of Peru.

Tretioscincus bifasciatus, A. DUM., redescribed by WERNER, t. c. p. 268.

LACERTIDÆ.

Pseudocordylus jordani, Hallow. Noticed and figured by BOUTLENGER, P. Z. S. 1900, p. 449, pl. xxxi, fig. 1.

Lacerta agilis, LINN., and *viridis*, LAUR. On Palaean specimens: KOLOMBATOVIC, Dragee Zool. Vij. Palaen. pp. 20 & 21; *L. viridis*, LAUR. On its habits and reproduction: R. ROLLINAT, Mem. Soc. zool. France xiii, p. 5; *L. ocellata*, DAUD. On its distribution in France: P. MARTI, Feuille Natural. xxxi, p. 27.

Nucras boulengeri, sp. n., O. NEUMANN, Ann. Nat. Hist. 7: v, p. 56, Uganda, Brit. E. Africa.

Gastropholis lucasi, sp. n., TORNIER, Zool. Jahrb. Syst. xiii, p. 591, fig., Tanga German E. Africa.

Latastia longirostris, REUSS, and *neumanni*, Matschie. Notes by STEINPACHNER, Denks. Ak. Wien ix, pp. 329 & 330.

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Sphenomorphus persicus, sp. n., NIKOLSKI, t. c. p. 380, pl. xx, fig. 3, Persia.

GERRHOSAURIDÆ.

Gerrhosaurus nigrilatus, Hallow. = *G. maculatus*, WGM.: TORNIER, Zool. Jahrb. Syst. xii, p. 593.

Zonosaurus tauronii, GRAND. Note by MOYNIARD, Bull. Soc. Philom. (9) ii, p. 107; *Z. longirostris*, sp. n., ad ibid. p. 106, Madagascar.

SCINCIDÆ.

Trachysaurus rugosus, Gray. Notes on the habits: SCHNEE, Zool. Garten xli, p. 17.

Mabuya quinquecarinata, Werner. Note by WERNER, Zool. Jahrb. Syst. xiii, p. 487; *M. isseli*, Ptrs. = *M. varia*, Ptrs.: TORNIER, Zool. Jahrb. Syst. xiii, p. 596, fig.; *M. batesi*, sp. n., BOULENGER, P. Z. S. 1900, p. 449, pl. xxxi, fig. 2, Gaboon.

Lygosoma nativitatis, Blgr., figured by BOULENGER, Mon. Christmas Id. pl. vii, fig. 2; *L. kilimensis*, Stejneger. Note by TORNIER, Zool. Jahrb. Syst. xiii, p. 601; *Sepacontias modestus*, Gthr. = *L. sundevalli*, Smith: TORNIER, t. c. p. 599, fig.; *L. bampfyldii*, E. Bartlett. Note by BOULENGER, Ann. Nat. Hist. (7) vi, p. 192. The same species, apparently described and figured as *L. (Riopa) schneideri*, sp. n., WERNER, Zool. Jahrb. Syst. xiii, p. 487, pl. xxxi, fig. 1, Sumatra; *L. shelfordi*, sp. n., BOULENGER, P. Z. S. 1900, p. 182, pl. xiv, fig. 1, Sarawak; *L. larutense*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v p. 306, Perak; *L. presigne* and *stellatum*, spp. nn., id. op. cit. vi, pp. 191 & 192, Perak; *L. clathrotis*, sp. n., id. t. c. p. 194, Brit. E. Africa; *L. surdum*, p. 333, pl. —, fig. 2, Selangor, and *scotophilum*, p. 335, Batu caves, Selangor, spp. nn., BOULENGER, J. Bombay Soc. xiii.

Ablepharus egeriae, Blgr., figured by BOULENGER, Mon. Christmas Id. pl. vii, fig. 3.

Eumece skiltonianus, B. & G. Note by McLAIN, Critic. Notes Coll. W. Coast U.S. p. 10 (1899); *E. zarudnyi*, sp. n., NIKOLSKI, Ann. Mus. St. Petersh. 1899, p. 399, pl. xx, fig. 4, Persia.

Chalcides ocellatus, Forsk. Note by STEINDACHNER, Denk. Ak. Wien lxix, p. 330; *C. ocellatus*, var. n. *occidentalis*, id. ibid. p. 331, Canary Ids.

Melanoseps ater, Gthr., var. n. *longicauda*, TORNIER, Zool. Jahrb. Syst. xiii, p. 602, German E. Africa.

OPHIOPSISEPIDÆ.

This family is established by JENSEN, Vid. Medd. 1900, p. 325, for *Ophiopseps nasutus*, Bocage, which is described and figured, p. 317, pl. iii.

RHİPTOGLOSSA.

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On the colour-changes in the Chameleon: F. W. GAMBLE, Tr. Manchester Micr. Soc. 1899, pp. 93-96.

Chameleon vulgaris, Daud., var. n. *musa*, STEINDACHNER, Denk. Ak. Wien lxix, p. 331, Ain Musa, Suez; *C. calcarifer*, Ptrs., noticed and figured, id. ibid. p. 332, pl. ii; *C. verrucosus*, Cuv., *melanocephalus*, Gray, and *lateralis*, Gray. Notes by MOCQUARD, Bull. Soc. Philom. (9) ii, pp. 95 & 96; *C. laevigatus*, Gray, redescribed and figured by TORNIER, Zool. Jahrb. Syst. xiii, p. 603, fig.; *C. purpureobas*, Blgr. = *C. roperi*, Blgr. = *C. dilepis*, Leach, id. ibid. p. 606; *C. fischeri*, Reichen. Notes by TORNIER, t. c. p. 611; *C. tempeli*, Tornier, var. n. *wolffi*, id. t. c. p. 613, fig., German East Africa; *C. filleborni*, sp. n., id. t. c. p. 614, fig., German E. Africa; *C. pfefferi*, sp. n., TORNIER, Zool. Anz. xxiii, p. 21, figg., Cameroon; *C. granddidieri* and *fallax*, spp. nn., MOCQUARD, t. c. p. 96, pl. ii, figg. 1 & 2, Madagascar.

Brookesia dentata, sp. n., MOCQUARD, t. c. p. 98, pl. ii, fig. 4, Madagascar.

PYTHONOMORPHA.

Mesosaurus maximus, Cope. Type specimen described and figured by WHITFIELD, Bull. Amer. Mus. xiii, p. 25, figg.

OPHIDIA.

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- G. S. WEST, Quart. J. Micr. Sci. xlivi, pp. 49-59, pl. iv, investigates the structure of the loreal sensory pit of the *Crotalinae*.
- H. MARTIN, C.R. Ass. Franc. xxviii, 11, pp. 522-526, pl. v, has a paper on the development of the poison-apparatus of *Vipera aspis*.
- E. LAGUERRE, C.R. Soc. Biol. lii, pp. 800 & 801, has remarks on the pancreas of Snakes.
- E. GLAS, S.B. Ak. Wien cix, iii, pp. 265-297, 3 pls., investigates the development of the spleen in *Tropidonotus natrius*.
- G. WETZEL, Anat. Anz. xviii, pp. 425-440, figg., reports on abnormal (duplex) eggs of *Tropidonotus natrius*.
- L. KATHARINER, Biol. Centrbl. xx, pp. 45-53, figg., writes on the mechanism of the bite of Viperine Snakes.
- J. PELLEGRIN, Bull. Soc. Philom. (9) ii, pp. 112-116, records his observations on the length of the life and the loss of weight in starving Snakes.
- F. WALL & G. H. EVANS have notes on Burmese Snakes. J. Bombay Soc. xiii, pp. 343-354.

TYPHLOPIDÆ.

Typhlops nigroalbus, D. & B. = *T. muelleri*, Schleg., WERNER, Zool. Jahrb. Syst. xiii, p. 488; *T. multilatus*, sp. n., WERNER, Zool. Anz. xxiii, p. 196, fig., Malacea; *T. villeyi*, sp. n., BOTTLER, Willey's Zool. Results v, p. 603, fig., Lifu, Loyalty Ids.

BOIDÆ.

F. WERNER, Zool. Garten xli, pp. 233-243, 274-287, writes on the habits and treatment of Boid Snakes in captivity.

Python molurus, L. Recorded from Pegu, Burma, by WALL & EVANS, J. Bombay Soc. xiii, p. 190.

Chondropython viridis, Schleg. Note by LÖNNBERG, Ann. Nat. Hist. (7) vi, p. 377.

COLUBRIDÆ.

Aglypha.

Stoliczkaia borneensis, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxiv, pl. i, fig. 2.

Tropidonotus, Kuhl. Remarks on the Californian species referred to *Thamnophis*, Fitz., McLAIN, Critic. Notes Coll. W. Coast U. S. p. 11 (1899); *T. tessellatus*, Laur., var. *maculatus*, Werner. Notes by LEHRS, Natur u. Haus viii, pp. 217 & 244, fig.; *T. piscator*, Schln. On the eggs: F. WALL, J. Bombay Soc. xiii, p. 373.

Thamnophis stejnegeri, sp. n., McLAIN, Contrib. Neotrop. Herpetol. p. 4, pl. — (1899), Salamanca, Guanajuato, Mexico.

Lycodon fasciatus, And. Note by WALL & EVANS, J. Bombay Soc. xiii, p. 372; *L. butleri*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 193, and J. Bombay Soc. xiii, p. 336, Perak.

Lepturophis, g. n., allied to *Lycodon*, for *L. borneensis*, sp. n., BOULENGER, P. Z. S. 1900, p. 183, pl. xv, Sarawak.

Zamenis mucosus, L. On the hatching of the eggs: WALL & EVANS, t. c. p. 189; *Z. dahlii*, Fitz. On its habits in captivity: P. SCHMIDT, Zool. Garten xli, p. 217; *Z. rogersi*, And., and *rhodorhachis*, Jan. Notes by STEINDACHNER, Denk. Ak. Wien lxix, p. 333.

Xenelaphis ellipsifer, sp. n., BOULENGER, P. Z. S. 1900, p. 184, pl. xvi, Sarawak.

Philothamnus angolensis, Bocage, is regarded as a variety of *P. irregularis*, Leach, by BETHENCOURT-FERREIRA, J. Sci. Lisb. (2) vi, p. 51.

Coluber quatuorlineatus, Lacép. On Dalmatian specimens: KOLOMBATOVIC, Druge Zool. Vij. Dalm. p. 23.

Rhadinaea lineata, sp. n., JENSEN, Vid. Medd. 1900, p. 105, fig., Lagoa Santa, Brazil.

Grayia smythii, Leach. Note by BOULENGER, P. Z. S. 1900, p. 453.

Ablabes hamptoni, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 409, Burma.

Contia satunini, sp. n., NIKOLSKI, Annuaire Mus. St. Petersb. iv, p. 449, Elizabethpol, Transcaucasia.

Dirosemia collaris, sp. n., WERNER, Zool. Anz. xxiii, p. 197, fig., Mexico.

Atractus badius, D. & B. and *crassicaudatus*, D. & B. Notes by WERNER, Verh. Ges. Wien I, p. 270.

Oreocalamus hanitschi, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxiv, pl. i, fig. 3.

Opisthoglypha.

As a result of his experiments on the poison of *Cælopeltis*, C. PHISALIX is inclined to regard the opisthoglyphous Snakes as intermediate between the Aglyphous Colubrids and the Proteroglyphous. Bull. Mus. Paris 1900, p. 38.

Hypsicrinya punctata, Gray, redescribed by WERNER, Zool. Jahrb. Syst. xiii, p. 490.

Dipsadomorphus cyaneus, D. & B. On a specimen from Rangoon, Burma: WALL & EVANS, J. Bombay Soc. xiii, p. 188.

Dipsadoboa unicolor, Gthr. Note by BOULENGER, P. Z. S. 1900, p. 454.

Oxyrhopus undulatus, sp. n., JENSEN, Vid. Medd. 1900, p. 106, fig., Lagoa Santa, Brazil.

Philodryas campicola, sp. n., JENSEN, t. c. p. 108, fig., Lagoa Santa, Brazil; *P. laticeps*, sp. n., WERNER, Zool. Anz. xxiii, p. 198, Sta Catharina, Brazil; *P. simonsii*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 185, Andes of Peru.

Cælopeltis monspessulana, Herm. Experiments on the poison: PHISALIX, Bull. Mus. Paris 1900, p. 33. E. TATON-BAULMONT, Feuille Natural. xxx, p. 85, describes the effects upon himself of the bite of this snake.

Atractaspis hildebrandti, Ptrs. = *Culamalaps unicolor*, Rhdt., TORNIER, Zool. Jahrb. Syst. xiv, p. 85.

Proteroglypha.

Hydrophiss rhombifer, sp. n., BOULENGER, Ann. Nat. Hist. (7) v, p. 306, Perak Coast.

Distira wrayi, sp. n., BOULENGER, t. c. p. 307, Perak Coast; *D. saravacensis*, sp. n., id., P. Z. S. 1900, p. 184, pl. xiv, fig. 2, Sarawak coast.

Pseudapstocalamus, g. n., near *Apstocalamus*, Blgr., and *Pseudelaps*, D. & B., for *P. nymani*, sp. n., LÖNNBERG, Ann. Nat. Hist. (7) vi, p. 578, New Guinea.

Naja guentheri, Blgr. = *N. goldii*, Blgr., BOULENGER, P. Z. S. 1900, p. 455. *Boulengerina annulata*, Buchh. & Peters, figured by BOULENGER, t. c. pl. xxxii.

Doliophis intestinalis, Laur., var. n. *vertebralis*, WERNER, Zool. Jahrb. Syst. xiii, p. 491, Sumatra.

Elops macrourus, Wied, *lemniscatus*, L., and *frontalis*, D. & B. Notes by SEURAT, Bull. Mus. Paris 1900, pp. 230 & 231.

AMBLYCEPHALIDÆ.

Amblycephalus nuchalis, sp. n., BOULENGER, P. Z. S. 1900, p. 185, pl. xvii, fig. 1, Sarawak; *A. vertebralis*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v, p. 307, Perak.

VIPERIDÆ.

G. LEIGHTON, Zoologist (4) iv, pp. 393-396, figg., investigates the capacity of the gullet in *Vipera berus* with a view to testing the possibility of its sheltering its young in that region.

Vipera urssini, Bp. On Dalmatian specimens: KOLOMBATOVIC, Druge Zool. Vij. Dalm. p. 24; *V. russellii*, Daud. On the shields surrounding the nostril: WALL & EVANS, J. Bombay Soc. xiii, p. 353, fig.

Echis carinatus, Schn. On its parturition: F. WALL, J. Bombay Soc. xiii, p. 184; *E. carinatus*, Schn., and *E. coloratus*, Gthr., compared and the latter recorded from Egypt: ANDERSON, Ann. Nat. Hist. (7) vi, p. 419, figg.

Ancistrodon blomhoffi, Boie. On its coloration in life: SCHNEE, Zool. Garten xli, p. 395.

ORNITHOSAURIA.

E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 105-107, remarks on the Ornithosaurians of the Weald and Purbeck.

DINOSAURIA.

H. F. OSBORN, Amer. Natural. xxxiv, pp. 777-799, figg., reconsiders the evidence for a derivation of the birds from the Dinosaurs.

E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 81-104, compares the Dinosaurs of Bernissart with those hitherto recorded from the Weald and Purbeck of England and the North of France.

Limnosaurus transylvanicus, g. and sp. nn., for remains of skulls apparently related to *Iguanodon* and *Hadrosaurus*, F. v. NOPCSA, Denk. Ak. Wien lxviii, p. 555, 6 pls., Upper Cretaceous of Szentveterfalva, Hungary.

Diplodocus, Marsh. On the vertebral formula: W. J. HOLLAND, Science (2) xi, p. 816; J. B. HATCHER, op. cit. xii, p. 828.

Zanclodon schützii, sp. n., for a tooth from the Trias of Hall, Württemberg. E. FRAAS, Jaresh. Ver. Wurttemb. lvi, p. 310, figg.

Dinosaurian teeth of the genera *Megalosaurus* and *Plateosaurus* figured by SAUVAGE, Bull. Soc. geol. France xviii, pl. ix.

C. DEPÉRET, t. c. p. 530, and C.R. Ac. Sci. cxxx, p. 637, announces the discovery of remains of *Crocodilus*, Seeley, in the Upper Cretaceous of the Montagne Noire, near Narbonne, in the South of France.

EMYDOSAURIA.

- E. VAN DEN BROECK, Mem. Soc. Belge Geol. 1900, pp. 107-112, remarks on the Crocodilians of the Weald and Purbeck.
 E. A. GÖLDI, Zool. Anz. xxiii, pp. 149-151, remarks on the hoof-like expansions of the claws in *Alligator*-embryos.

CHELONIA.

- G. R. WIELAND, Amer. J. Sci. (4) ix, pp. 413-423, figg., remarks on certain stages in the evolution of the humerus of marine Chelonians.
 F. SIEBENROCK, SB. Ak. Wien cix, 1, pp. 441-448, pl. —, describes and figures the hyoid apparatus, larynx, and trachea of *Testudo calcarata*, Schn.
 B. HALLER, Morphol. Jahrb. xxviii, pp. 252-346, pls. xv-xix, investigates the histological structure of the brain of *Emys*.
 EMILY R. GREGORY, Zool. Jahrb. Anat. xiii, pp. 683-714, pls. xlvi-l, has observations on the development of the excretory system in Chelonians.
 SCHNEE, Zool. Garten xli, pp. 215-217, remarks on water-tortoises feeding on land.
Trionyx, Geogr. On the fossil species of the Mayence basin: A. v. REINACH, Abh. Senckenb. Ges. xxviii, p. 104, pls. xxxvii-xlii; *T. boulegeri*, p. 104, pls. xxxvii & xxxviii, Oligocene of Alzey, *messelianus*, p. 118, pls. xli & xlii, Miocene (?) of Messel near Darmstadt, spp. nn. (foss.), id. ibid.; *T. preochenensis*, p. 40, pls. i & ii, fig. 1, and *aspidiformis*, p. 44, pl. ii, fig. 2, spp. nn. (foss.), LAUBE, Abh. Ver. Lotos ii, Brown Coal of Bohemia.
Sternotherus sinuatus, Smith = *S. nigricans*, Donnd., TORNIER, Zool. Jahrb. Syst. xiii, p. 582.
Podocnemis egyptiaca, sp. n. (foss.), C. W. ANDREWS, Geol. Mag. (2) Dec. iv, vii, p. 1, pl. i, Lower Miocene, Moghara, Egypt.
Platemys vernerii, sp. n., SCHNEE, Zool. Anz. xxiii, p. 463, figg., S. Paulo, Brazil.
Plesiochelys rectensis, sp. n. (foss.), HOOLEY, Geol. Mag. (2) Dec. iv, vii, p. 265, Wealden, Isle of Wight.
Chelydra argillarum, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 47, pl. ii, fig. 7, Brown Coal of Bohemia.
Bellia borneensis, Gray. Note by WERNER, Zool. Jahrb. Syst. xiii, p. 481.
Brookia baileyi, E. Bartl. On a very large specimen, with remarks on the synonymy: BOULENGER, P. Z. S. 1900, p. 661.
Promalacoclemmys, g. n., near *Mulacoclemmys*, Gray, for *P. boulengeri*, sp. n. (foss.), A. v. REINACH, Abh. Senckenb. Ges. xxviii, p. 92, pl. xxx, Miocene of Hessler, near Biebrich.
Ocadia, Gray. On the fossil species: A. v. REINACH, t. c. p. 95, pls. xxxi-xxxvi and xliii; *O. hessleri*, sp. n. (foss.), id. ibid., p. 95, pl. xxxi, Miocene of Hessler, near Biebrich.
Ptychogaster, Pomel (foss.). Revision of the species by A. v. REINACH, t. c. p. 21, pls. vi-xxix; *P. lepisi*, p. 33, pls. xiv-xvi, Oligocene of Alzey, *erbstadtianus*, p. 55, Miocene of Erbstadt-Kaichen, *francfurtanus*, p. 56, pl. xx, Miocene of Frankfort/M., *roemerii*, p. 58, pl. xxi, Miocene, Wiesbaden, *boettgeri*, p. 60, pls. xxii-xxvii, Miocene of Hessler near Biebrich, *kinkelini*, p. 76, pls. xxviii & xxix, Miocene of Hessler, spp. nn., id. ibid.
Testudo, L. On the Roumanian species (*T. graeca*, *ibera*, *marginata*): RAZNOSANU, Bull. Soc. Bucarest ix, p. 278, figg. L. VAILLANT, Bull.

- Mus. Paris, 1899, p. 354, has remarks concerning the history of the extinct gigantic Tortoise of Reunion, and A. A. FAUVEL, op. cit. 1900, p. 170, on that of Juan de Nove (Farquhar Id.); *T. indica*, Schneid. On the type specimen: VAILLANT, Arch. Mus. Paris (4) ii, p. 25, pl. viii; *T. microphyz*, Gthr. Note by VAILLANT, Bull. Mus. Paris 1900, p. 228; *T. polypheus*, Daud. Notes on the habits by W. B. FLETCHER, P. Indiana Ac. 1899, p. 46; *T. zarudnyi*, Nik. Note by NIKOLSKI, Annuaire Mus. St. Petersb. iv, p. 375; *T. promarginata*, p. 7, pls. i-iv, and *ptychogastroides*, p. 19, pl. v, spp. nn. (foss.), A. v. REINACH, Abh. Senckenb. Ges. xxviii, Miocene, Mayence Basin. *Archelon ischyros*, Wieland (foss.). On the skull and pelvis and the probable relationships: WIELAND, Amer. J. Sci. (4) ix, p. 237, figg., pl. ii; *A. marshii*, sp. n. (foss.), id. ibid., p. 248, Fort Pierre Cretaceous, Dakota.
- Protosphargis veronensis*, Capellini (foss.). Remarks by CAPELLINI, Rend. Acc. Bologna (2) ii, 1898, p. 97, pl. —.

ICHTHYOSAURIA.

- F. BAUER, Anat. Anz. xviii, pp. 574-588, figg., has notes on the structure of the pectoral and pelvic girdles and of the skull of *Ichthyosaurus*. E. GEINITZ, N. Jahrb. Min. 1900, i, p. 63, fig., records some Ichthyosaurian vertebræ from the Upper Lias of Dobbertin, Mecklenburg. *Ichthyosaurus australis*, McCoy (?). On a fragment of jaw from the Flinders R., Queensland: C. W. ANDREWS, P. Z. S. 1900, p. 660, fig.

PLESIOSAURIA.

- Plesiosaurus shirleyensis*, sp. n., W. C. KNIGHT, Amer. J. Sci. (4) x, p. 115, fig., Jurassic, Rocky Mountains. *Cimoliosaurus larvamensis*, sp. n., W. C. KNIGHT, t. c. p. 117, fig., Jurassic, Rocky Mountains. *Stereosternum tumidum*, Cope. Specimen in the Dresden Museum described and figured by GEINITZ, Ann. Soc. geol. Belgique xxv bis, p. 37, pl. i.

RHYNCHOCEPHALIA.

- H. SCHAUFLISLAND, Arch. mikr. Anat. lvi, pp. 747-867, pls. xxxii-xxxiv, has a further contribution to the development of *Sphenodon punctatus*. G. B. HOWES & H. H. SWINERTON, P. Z. S. 1900, pp. 516 & 517, give an abstract of their forthcoming Memoir on the development of the skeleton of *Sphenodon punctatus*. R. BURCKHARDT, Geol. Mag. (2) Dec. iv, vii, pp. 486-492, 529-535, figg., pl. xix, gives a description of the remains of *Hyperodapedon gordoni*, Huxley (foss.), and remarks on the affinities of the group of Rhynchocephalians to which it pertains, and which he thinks is connected in a direct line with the lowest forms. E. T. NEWTON, P. Geol. Ass. xvi, p. 496, fig., remarks on a bone from the Chalk of Cuxton, possibly a palatine or pterygoid of a Rhynchocephalian such as *Rhynchosaurus*. *Hyperodapedon minor*, sp. n. (foss.), BURCKHARDT, t. c. p. 492. Trias, Scotland.

ANOMODONTIA.

- Aristodesmus riitimeyeri*, Wiedersheim [see Zool. Rec. 1896]. Skeleton described and figured by SEELEY, Quart. J. Geol. Soc. lvi, p. 620, figg. *Dicranozygoma leptoscelus*, g. and sp. nn., apparently Cynodontian, SEELEY, t. c. p. 646, pl. xxxvi, Trias, Cape Colony.
- Eurycarpus oweni*, Seeley. On some newly-discovered remains: SEELEY, t. c. p. 325, figg., pl. xxi.
- Ictidosuchus*, g. n., for *I. primævus*, sp. n., founded on the remains of a small Theriodont of a generalized type, from the Karoo Beds near Pearston: R. BROOM, Ann. Nat. Hist. (7) vi, p. 314, fig.

BATRACHIA.

- A. SABATIER, C.R. Ac. Sci. cxxx, pp. 633-637, writes on the morphology of the pelvic girdle in Batrachians.
- P. SCHULZ, Arch. Physiol. 1900, pp. 1-8, figg., writes on the musculature of the stomach in Batrachians.
- H. M. BERNARD, Quart. J. Micr. Sci. xlivi, pp. 23-47, pl. iii, investigates the structure of the retina in Batrachians.
- G. TORNIER, Zool. Anz. xxiii, pp. 233-256, figg., remarks on regenerated tails of Batrachians.
- F. RAFFAELE, Anat. Anz. xviii, pp. 337-344, figg., has a note on the genesis of the lateral nerve in Batrachian larvae. Remarks by KOELLIKER, t. c. p. 511.
- V. ELLERMANN, Anat. Anz. xviii, pp. 182-189, figg., writes on the slime secretion in the oviduct of Batrachians.
- G. V. CIACCIO, Rend. Acc. Bologna (2) iii, 1899, pp. 95-105, pl. --, compares the spermatozoa of *Molge cristata* with those of *Rana esculenta*.
- R. WIEDERSHEIM, Biol. Centrbl. xx, pp. 304-316, 321, 333, reviews our knowledge of the modes of nursing in the class Batrachia.
- H. LEBRUN, Rev. Quart. Sci. (2) xviii, reviews our knowledge of the oviposition in the Batrachians of Belgium.
- On the earliest use of the name *Batrachia*: T. GILL, Science (2) xii, p. 730.

ECAUDATA.

- M. BOUIN, Arch. Biol. xvii, pp. 201-383, pls. ix-xii, investigates the histogenesis of the female genital gland in *Rana temporaria*.
- M. BOUIN, Bibliog. anat. viii, pp. 53-59, 103-108, figg., has remarks on the genital glands in tadpoles of *Rana temporaria*.
- R. C. PUNNETT describes the genital glands and ducts in a hermaphrodite *Rana temporaria*. Ann. Nat. Hist. (7) vi, pp. 179 & 180, pl. ix.
- A. POLICARD, C.R. Soc. Biol. lii, pp. 846 & 847, has some remarks on Bidder's organ in the Toad.
- O. V. SRDÍNKO, Anat. Anz. xviii, pp. 500-508, figg., writes on the structure and development of the suprarenal bodies in Tailless Batrachians.
- E. WARREN, Anat. Anz. xviii, pp. 122 & 123, fig., records some abnormalities in the blood-vessels of Frogs.
- T. W. SHORE, J. Anat. Physiol. norm. path. (2) xiv, pp. 398-402, fig., describes an unusual arrangement of the renal portal vein in *Rana temporaria*.

- A. E. SMIRNOW, Anat. Hefte, Arb. xiv, pp. 409-431, figg., pls. xvii & xviii, has a contribution to the morphology of the sympathetic ganglion-cells of the Frog.
- J. GAULE, Arch. ges. Physiol. lxxxiii, pp. 83-88, pl. iii, has investigated the sexual differences in the weight of the muscles in *Rana esculenta*.
- I. ERMAN, Anat. Anz. xvii, pp. 20-30, figg., and Verh. Anat. Ges. 1900, pp. 157-164, figg., writes on giant spermatozoa of *Bombinator igneus*, and Anat. Anz. xvii, pp. 129-145, figg., on the development and structure of the spermatozoa of this Batrachian.
- J. ARNOLD, Anat. Anz. xvii, pp. 517-519, remarks on the demonstration of the expansion of the nerve-terminations in the fungiform papillae of the Frog's tongue.
- S. BAGLIONI, Arch. Physiol. 1900, Suppl. pp. 33-59, investigates the mechanism of respiration in the Frog.
- E. GODLEWSKI, JUN., Bull. Ac. Cracovie 1900, pp. 232-255, figg., has made experiments on the influence of oxygen on the development of the ovum of *Rana temporaria*.
- K. REUTER, Anat. Hefte, Arb. xiii, pp. 339-361, pls. xviii-xx, has investigated the development of the spiral gut of *Alytes obstetricans*, and, op. cit. xiv, pp. 433-446, pls. xix & xx, and xv, pp. 625-672, pls. lii-lvi, its regression.
- H. V. WILSON, Anat. Anz. xviii, pp. 209-239, & 384, figg., investigates the formation of the blastopore in the Frog egg.
- T. H. MORGAN, Biol. Bull. ii, pp. 111-119, figg., has made grafting experiments with embryos of Frogs.
- E. BATAILLON, C.R. Ac. Sci. cxxx, pp. 115-118, writes on experimental parthenogenetic segmentation of frog-ova.
- LILIAN V. SAMPSON, Amer. Natural. xxxiv, pp. 687-715, gives a summary of the unusual modes of breeding and development in Tailless Batrachians, with a very complete bibliographical index to the subject.
- MAUREL & LAGRIFFE, C.R. Soc. Biol. lii, pp. 217-219, have made experiments to ascertain the highest temperature that can be endured by frogs.
- M. LEVY, Zool. Garten xli, pp. 178-180, has further observations on the hibernation of Frogs under water.

PHANEROGLOSSA.

RANIDÆ.

Rana cyanophlyctis, Schn., var. n. *seistanica*, NIKOLSKI, Annaire Mus. St. Petersb. iv, p. 406, Persia; *R. macrodon*, Kuhl, and *tigrina*, Daud. Tadpoles described and figured by S. FLOWER, P. Z. S. 1899, pp. 889 & 892, pl. lix, figg. 1 & 2; *R. esculenta*, var. *lessonata*, Camer., recorded from the Tessin by FATIO, Rev. Suisse Zool. viii, p. 474; *R. latastii*, Blgr., recorded from the same part of Switzerland under the erroneous name of *R. graeca*, Blgr.: id. ibid. p. 474 [Specimen identified as *R. latastii*.—REC.]; *R. temporaria*, L. Recorded from the Scilly Ids. by F. W. TERRY, Zoolologist (4) iv, p. 383; *R. agilis*, Thom. On its distribution in Germany: WOLTERSTORFF, Naturw. Wochenschr. xv, p. 205; *R. forsteri*, Blgr., and *pustulosa*, Blgr., figured by GÜNTHER, Biol. Centr.-Amer., Batr., pl. ix, fig. a, & lxi, fig. b; *R. aquiplicata*, Werner, described by BOULENGER, P. Z. S. 1900, p. 437; *R. novebritanniae*, Werner, described and figured from Sumatra by WERNER, Zool. Jahrb. Syst. xiii, p. 493, pl. xxxii, fig. 3; *R. jerboa*, Gthr. Larva (undetermined) noticed and figured by M. WEBER, Ann. Jard. Botan.

- Buitenzorg*, Suppl. ii, 1898, p. 10, fig.; *R. graminea*, sp. n., BOULENGER, P. Z. S. 1899, p. 958, pl. lxvii, fig. 1, Hainan; *R. nigra*, sp. n., MOCQUARD, Bull. Soc. Philom. (9) ii, p. 109, Madagascar; *R. omiltemana*, p. 200, pl. lxi, fig. A, Omilteme, Guerrero [= *R. halecina*, Kalm.—REC.], *bonaccana*, p. 201, pl. lx, fig. B, Id. of Bonacca, Yucatan [= *palmipes*, Spix.—REC.], *melanozoma*, p. 203, pl. lxiii, fig. B, Guatemala and Nicaragua [= *palmipes*, Spix.—REC.], and *godmani*, p. 204, pl. lxiii, fig. A, Costa Rica, spp. nn., GÜNTHER, op. cit.
- Staurois hainanensis*, sp. n., BOULENGER, P. Z. S. 1899, p. 958, pl. lxvii, fig. 2, Hainan.
- Scutoleps*, g. n., like *Rana*, but with a vertical pupil: BOULENGER, op. cit. 1900, p. 438; *S. gabonicus*, sp. n., id. ibid. p. 439, pl. xviii, fig. 1, Gaboon.
- Petropedetes*, Reichenow. On the characters of the three species, and note on *P. (Tympanoceros) nevotoni*, Bocage, BOULENGER, t. c. p. 439.
- Phrynobatrachus auritus* and *latirostris*, spp. nn., BOULENGER, t. c. p. 440, pl. xxviii, figg. 2 & 3, Gaboon.
- Arthroleptis africanus*, Hallow., redescribed by BOULENGER, t. c. p. 441; *A. inguinalis*, sp. n., id. ibid. p. 442, pl. xxvii, fig. 2, Gaboon.
- Gymnophoonyx*, g. n., remarkable for the exposed ungual phalanges of the toes, for *G. batesi*, sp. n., BOULENGER, t. c. p. 442, pl. xxix, Gaboon.
- Trichobatrachus*, g. n., with villose dermal papillæ on the sides, for *T. robustus*, sp. n., BOULENGER, t. c. p. 443, pl. xxx, Gaboon. Remarks on its hair-like papillæ: GADOW, Anat. Anz. xviii, p. 588.
- Dilibates*, g. n., with nearly four toes and a vertical pupil: BOULENGER, t. c. p. 443; *D. platycephalus*, sp. n., id. ibid. p. 444, pl. xxvii, fig. 3, Gaboon.
- Rhacophorus leucomystax*, Gravh. Tadpoles figured by S. FLOWER, P. Z. S. 1899, pl. lix, fig. 3; *R. colletti*, Blgr., and *nigropalmatus*, Blgr., described and figured by WERNER, Zool. Jahrb. Syst. xiii, pp. 494 & 496, pl. xxxii, fig. 4, and pl. xxxiv, fig. 8; *R. reinwardti*, var. n. *lateralis*, id. ibid. p. 495, pl. xxxiii, fig. 6, Sumatra; *P. phyllopygus*, p. 494, pl. xxxii, fig. 5, and *pulchellus*, p. 495, pl. xxxiii, fig. 7, spp. nn., id. ibid., Sumatra; *R. oxycephalus*, sp. n., BOULENGER, P. Z. S. 1899, p. 959, pl. lxvii, fig. 3, Hainan; *R. shelfordi*, sp. n., id. op. cit. 1900, p. 185, pl. xviii, fig. 2, Sarawak.
- Chiramanitis kachouiskii*, sp. n., NIKOLSKI, Annuaire Mus. St. Petersb. v., p. 246, Abyssinia.
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- Hylambates brevirostris*, Werner. Note by BOULENGER, t. c. p. 445.

DENDROBATIDÆ.

- Mantella aurantiaca*, sp. n., MOCQUARD, Bull. Soc. Philom. (9) ii, p. 110, Madagascar.
- Cardioglossa*, g. n., with large cordiform tongue, and without bony style to the sternum: BOULENGER, P. Z. S. 1900, p. 445; *C. gracilis*, sp. n., id. ibid. p. 446, fig., Gaboon.

ENGYSTOMATIDÆ.

- Atelopus varius*, Stann. Varieties figured by GÜNTHER, Biol. Centr.-Amer., Batr. pl. lxii, figg. A-C.

- Oreophrynella quelchii*, Blgr., figured by BOULENGER, Tr. Linn. Soc. London (2) viii, pl. v, fig. 3; *O. macconnelli*, sp. n., id. ibid. p. 55, pl. v, fig. 4, Mt Roraima, Brit. Guiana.
Calophrinus heterochirus, sp. n., BOULENGER, P. Z. S. 1900, p. 186, pl. xvii, fig. 4, Sarawak.
Microhyla ornata, D. & B. Tadpole described and figured by S. FLOWER, P. Z. S. 1899, p. 902, pl. lx, fig. 1; *M. bulesi* and *annectens*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, p. 188, Perak.
Otophryne, g. n., allied to *Hypopachus*, for *O. robusta*, sp. n., BOULENGER, Tr. Linn. Soc. London (2) viii, p. 55, pl. v, fig. 5, Mt Roraima, Brit. Guiana.
Engystoma elegans, Blgr., figured by GÜNTHER, Biol. Centr.-Amer., Batr. pl. lxii, fig. d.
Glossostoma, g. n., near *Engystoma*, for *G. aterrimum*, sp. n., GÜNTHER, op. cit. p. 210, pl. lxiv, fig. A, Costa Rica.

DYSCOPHIDÆ.

Dyscophus insularis, Grand. Note by MOCQUARD, Bull. Soc. Philom. (9) ii, p. 111.

CYSTIGNATHIDÆ.

- Hylodes polyptychus*, Cope, pl. lxvi, fig. c, *underwoodi*, Blgr., pl. lxvi, fig. b, and *rhodopis*, Cope, pl. lxvii, fig. c, figured by GÜNTHER, Biol. Centr.-Amer., Batr.; *H. melanostictus*, Cope, figured as *H. brocchii*, Blgr., by GÜNTHER, op. cit. pl. lxviii, figg. A & B; *H. plicatus*, p. 228, pl. lxvi, fig. B, Jalapa, *calcitrans*, p. 230, pl. lxvii, fig. B, Guerrero and Jalisco, *platyrhynchus*, p. 230, pl. lxvii, fig. A, Costa Rica, and *renatus*, p. 234, pl. lxviii, fig. C, Jalapa, spp. nn., id. ibid.; *H. marmoratus*, sp. n., BOULENGER, Tr. Linn. Soc. London (2) viii, p. 56, pl. v, fig. 6, Mt Roraima, Brit. Guiana.
Liohyla guentheri, Kef., pl. lxvi, fig. A, and *fleischmanni*, Bttgr., pl. lxiv, fig. B, figured by GÜNTHER, op. cit.; *L. pittieri*, p. 223, pl. lxv, fig. B, and *engytypanum*, p. 224, pl. lxv, fig. A [= *Hylodes melanostictus*, Cope.—REC.], spp. nn., id. ibid., Costa Rica.
Syrrhaphus omiltemanus, sp. n., GÜNTHER, Biol. Centr.-Amer., Batr. p. 216, Omilteme, Guerrero.
Paludicola simonsii, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 182, Andes of Peru.
Tomodactylus, g. n., differing from *Paludicola*, Wagl., in the presence of digital disks, for *T. amula*, sp. n., GÜNTHER, Biol. Centr.-Amer., Batr. p. 219, pl. lxiv, fig. C, Amula, Guerrero.

BUFONIDÆ.

- Nectophryne afra*, Ptrs. Note by BOULENGER, P. Z. S. 1900, p. 436, fig.
Bufo penangensis, Stol. Tadpole described and figured by S. FLOWER, P. Z. S. 1899, p. 909, pl. lx, fig. 3; *B. vulgaris*, Laur. L. CAMERANO, Atti Acc. Torino (2) I, p. 81, 2 pls., studies the variations of this species, principally by the statistical method. The Eastern form, from Japan, is separated as a distinct species under the name of *B. praetextatus*, Boie; *B. viridis*, Laur., var. n. *persica*, NIKOLSKI, Annuaire Mus. St. Petersb. IV, p. 406, Persia; *B. cophotis*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 181, Andes of Peru; *B. lati-*

frons, sp. n., BOULENGER, P. Z. S. 1900, p. 435, pl. xxvii, fig. 1, Gaboon.

Nectes subasper, Tsch., figured by WERNER, Zool. Jahrb. Syst. xiii, pl. xxxv, fig. 10; *N. sumatranaus*, sp. n., id. ibid. p. 497, pl. xxxv, fig. 9, Sumatra.

HYLIDÆ.

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V. PISCES.

BY

G. A. BOULENGER, F.R.S.

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- . On a new specimen of the Clupeoid fish *Aulolepis typus* from the English Chalk. T. c. pp. 324-326, pl. ix, fig. 2.
- . On a new Ostracoderm (*Euphanerops longaeus*) from the Upper Devonian of Scaumenac Bay, Province of Quebec, Canada. T. c. pp. 416-419, pl. x, fig. 1.
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II. GENERAL SUBJECT.

B. DEAN, Mem. N. York Ac. ii, p. 22, remarks on the primary groups of Fish-like vertebrates (*Chordata*). A new Class, *Arthrognathi*, is proposed to receive the *Arthrodira* of Smith Woodward and the *Anarthrodira*, a new sub-class for *Macropetalichthys*. The *Arthrognathi* are considered to be nearly related to the *Ostracophori* and widely remote from the *Dipnoi*.

J. GRAHAM KERR, P. Cambridge Soc. x, pp. 227-235, remarks on the hypotheses as to the origin of the paired limbs.

P. STÉPHAN, Bull. Sci. France Belgique xxxiii, pp. 281-423, pls. i-viii, studies the histological structure of the bony tissue of Fishes.

H. HOYER, Bull. Ac. Cracovie 1900, pp. 263-279, figg., has considerations on the morphology of the heart of Fishes.

B. RAWITZ, Arch. mikr. Anat. lvi, pp. 149-168, pl. vi, investigates the blood-corpuscles of Sturgeons and various Teleosteans.

H. B. HARMAN, Rep. Brit. Ass. 1899, pp. 780 & 781, remarks on the palpebral and oculomotor apparatus of Fishes.

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CATOIS, C.R. Ass. Franc. xxviii, ii, pp. 515-519, gives a summary account of his histological researches on the olfactory and cerebellar ducts of Fishes.

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J. PELLEGRIN brings out a work on poisonous Fishes: *Les Poissons Vénéneux*, Paris, 8vo, 121 pp., figg.—H. COUTIÈRE, Caus. Sci. Soc. Zool. France 1900, pp. 25-36, has an article on the same subject.

G. B. DE-TONI, Nuova Notarista x, 1899, pp. 21-27, has general remarks on the food of Fishes, with references to the bibliography of the subject.

R. W. SHUFELDT, Amer. Natural. xxxiv, pp. 275-281, has notes on the psychology of Fishes.

L. EDINGER, Ber. Senckenberg. Ges. 1900, pp. cvii-cxvi, writes on the memory of Fishes.

C. CHUN's popular work "Aus den Tiefen des Weltmeeres" contains, pp. 505-537, remarks on and figures of deep-sea Fishes, provisionally identified, several of which prove to belong to new genera and species, which will be described by BRAUER.

D. S. JORDAN, Science (2) xii, p. 785 remarks on the effects of applying generic names according to the rule of regarding as the type the first species of a genus.

III. FAUNÆ.

EUROPE.

E. BADE brings out the three first fascicles of a book on the Freshwater Fishes of Central Europe (Berlin, 8vo), and C. RAVENET-WATTEL a pocket-atlas on the Freshwater Fishes of France, Belgium, and Switzerland.

Scotland. On the Fishes of the Firth of Clyde: T. SCOTT, Rep. Fish. Board Scotland xviii, pp. 272-293. W. E. CLARKE, Ann. Scott. Nat. Hist. 1900, pp. 8-17, 202-215, gives a list, with references, of the Fishes added to the fauna of the Firth of Forth and its tributaries since 1837.

Isle of Man. On the Fishes captured in and around Port Erin Bay: J. T. JENKINS, Rep. Faun. Liverp. Bay v, pp. 291-294, and P. Liverp. biol. Soc. xiv, pp. 99-102.

Hampshire and Isle of Wight. List of the Fishes by BOULENGER, Victoria History, Hampshire i, pp. 197-203.

France. Synoptic tables of the Freshwater Fishes by J. VACHAL (Clermont, 8vo, 24 pp.). A. ACLOQUE'S Faune de France, small edition, last part, pp. 339-476, contains keys for the identification of the Fishes of France, with figures of the principal species.

Germany. L. BUXTAUM, Zool. Garten xli, pp. 55 & 56, 390-392, reports on the movements of the Main Fishes during the spring of 1899, and that of 1900.

Switzerland. F. ZSCHOKKE, Denk. Schweiz. Ges. xxxvii, pp. 264-270, remarks on the various species of Fishes occurring in lakes of the Alps at great altitudes.

Portugal. L. VIEIRA, Ann. Sci. Nat. Porto vi, pp. 152-165, continues his catalogue of the Portuguese Fishes preserved in the Museum of Coimbra University.

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Caspian Sea. Contributions to the Ichthyology, by E. LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, 38 pp.

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Altai. On the Fishes of Lake Teletzki: WARPACHOWSKI, Annaire Mus. St. Petersb. v, pp. 412-427, pl. xiii.

Lake Baikal. On the Fishes: L. S. BERG, Annaire Mus. St Petersb. v, pp. 326-372, pl. viii.

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IV. PALÆONTOLOGY.

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Parana (Eocene?) Formation, Argentina. On some Fish-remains: A. S. WOODWARD, *Ann. Nat. Hist.* (7) vi, pp. 1-7.

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V. REFERENCES ARRANGED SYSTEMATICALLY.

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- E. P. ALLIS, *Anat. Anz.* xviii, pp. 257-289, figg., has a paper dealing with the homologies of the maxillary bone in Crossopterygian and other Teleostome Fishes.
 H. F. E. JUNGERSEN, *Zool. Anz.* xxiii, pp. 328-334, has a preliminary communication on the urogenital organs of *Polypterus* and *Amia*.

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 H. M. KYLE, *J. Linn. Soc.* xxvii, pp. 541-556, pl. xxxviii, writes on the presence of nasal secretory sacs and a naso-pharyngeal communication in Teleosteai.
 T. W. BRIDGE, *J. Linn. Soc.* xxvii, pp. 503-540, pls. xxxvi & xxxvii, writes on the air-bladder of *Notopterus* and its connection with the auditory organ.
 E. YUNG & O. FUHRMANN, *Arch. Zool. exp.* (3) viii, pp. 333-351, pls. ix & x, have a contribution to the histology of the mucous membrane of the intestine in *Lota vulgaris*.
 C. S. TAMES, *Phil. Trans.* xciii, pp. 35-46, pl. v, has further observations on the development of the enamel in Teleosteans.

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- G. D. SCHAFER, Arch. Entwicklungsmech. x, pp. 685-691, pl. xvii, writes on some points in the structure of the retina of *Micropterus salmonoides*.
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- J. T. CUNNINGHAM, P. Irish Ac. (3) v, pp. 752 & 753, remarks on the young stages of Teleosteans from the West Coast of Ireland.
- F. HEINCKE & E. EHRENBAUM, Wiss. Meeresuntersuch. (2) iii, pp. 127-332, figg., pls. ix & x, have a memoir on the eggs and larvæ of the Fishes of the Bay of Heligoland.
- W. GARSTANG, J. Mar. Biol. Ass. (2) vi, pp. 70-93, gives an account of preliminary experiments on the rearing of Sea-Fish larvæ.
- E. BATAILLON, C.R. Ass. Franc. xxviii, ii, pp. 529-533, writes on the blastoderm and the parablast of Teleosteans.
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- T. H. MORGAN, Arch. Entwicklungsmech. x, pp. 120-134, figg., has made experiments on the regeneration of the fins of Teleosteans.
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ACANTHOPTERYGII.

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PERCIDÆ.

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Etheostoma aubeenabi, sp. n., EVERMANN, Rep. U. S. Fish. Comm. f. 1899, p. 367, pl. xvii, L. Maxinkuckee, Indiana.

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- Labrax longiceps*, p. 685, pl. xii, fig. 1, *bosniensis*, p. 687, pl. xii, fig. 2, and *steinbachneri*, p. 689, pl. xiii, fig. 3, spp. nn. (foss.), SIEBENROCK, Wiss. Mitt. Bosnien vii, Lower Tertiary, Bosnia.
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- Serranus gracilispinis*, sp. n. (foss.), SIEBENROCK, t. c. Lower Tertiary, Bosnia.
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- Apogon brasiliensis*, sp. n., GILBERT, P. Washington Ac. ii, p. 168, pl. ix, fig. 3, Coast of Brazil.
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SQUAMIPINNES.

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- Hoplognathus woodwardi*, sp. n., WAITE, Rec. Austral. Mus. iii, p. 212, pl. xxxvii, Mouth of the Swan River.

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BERYCIDÆ.

Bathydrupea hostynii, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxviii, fig. 2.

SCIÆNIDÆ.

Pseudotolithus mitsukurii, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 356, pl. xiii, Bay of Tokyo, Japan.

✓ *Cilus*, g. n. [= *Sciæna*, Cuv.—Rec.], DELFIN, Act. Soc. Chili x, p. 55; *C. montti*, sp. n., id. ibid., p. 56, fig., Coast of Chili.

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Chiæmodæs niger, Johns., figured by ALCOCK, Ill. Zool. Investig. pl. xxviii,

fig. 3.

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PEDICULATI.

- Lophius gracilimanus*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxix, fig. 3.
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Callionymus fuscatus, C. & V. On a specimen from the Coast of Dalmatia: KOLOMBATOVIC, t. c. p. 18; *C. beniteguri*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 370, pl. xvii, Bay of Tokyo, Japan.

BLENNIIDÆ.

- Blennius yatebei*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 374, pl. xix, Japan.
- ✓ *Brannerella*, g. n., closely allied to *Starkia*, Jord. & Everm., for *B. brasiliensis*, sp. n., GILBERT, P. Washington Ac. ii, p. 180, pl. ix, fig. 1, Coast of Brazil.
- ✓ *Gillias*, g. n., near *Euneacanthus*, Jord. & Everm., for *G. jordani*, sp. n., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, p. 357, Puerto Rico.
- Syacium micrurum*, Ranz. Note by GILBERT, P. Washington Ac. ii, p. 182.
- Mulacoctenus culebrae*, p. 357, *moorei*, p. 358, and *puertoricensis*, p. 358, spp. nn., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, Puerto Rico.
- ✓ *Auchenistius*, g. n., near *Auchenopterus*, for *A. stahli*, sp. n., EVERMANN & MARSH, t. c. p. 359, Puerto Rico.
- Auchenopterus albicaudus*, p. 360, *rubescens*, p. 360, *cingulatus*, p. 361, and *fajardo*, p. 361, spp. nn., EVERMANN & MARSH, t. c., Puerto Rico.
- ✓ *Coralliozetus*, g. n., probably related to *Ophiolethrinus*, for *C. cardonei*, sp. n., EVERMANN & MARSH, t. c. p. 362, Puerto Rico.
- Labrisomus nuchipinnis*, Q. & G. Note by GILBERT, P. Washington Ac. ii, p. 179.

MUGILIDÆ.

- Mugil caldwelli*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 524, pl. xix, fig. 4, Samoa.

ATHERINIDÆ.

- Atherina mochon*, C. & V. Note by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 8.
- Eslopearum arge*, sp. n., JORDAN & SNYDER, Bull. U. S. Fish Comm. f. 1899, p. 133, fig., Rio Verde, near Aguas Calientes, Mexico.
- Chirostoma lucius* and *sphyraena*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) v, pp. 54 & 55, L. Chapala, Mexico; *C. chapala*, p. 135, fig., *promelas*, p. 136, fig., *diazii*, p. 137, fig. [= *lucius*, Blgr.] *crystallinum*, p. 139, fig., *ocellane*, p. 140, fig., and *lermae*, p. 142, fig. [= *sphyraena*, Blgr.], spp. nn., JORDAN & SNYDER, t. c., L. de Chapala, Mexico.

GASTROSTEIDÆ.

- Gasterosteus aculeatus*, L. A. GIARD, C.R. Soc. Biol. lii, p. 46, has made experiments on the rapid adaptation of this fish to fresh and salt water; *G. platygaster*, Kessler. On its occurrence in the Danube: STEINDACHNER, SB. Ak. Wien cviii, i, p. 539.

OPHIOCEPHALIDÆ.

- Ophiocephalus gachua*, Ham. Buch. Recorded from the Bampur R., Persia, by NIKOLSKI, Annuaire Mus. St. Petersb. 1899, p. 407.

GOBIESOCIDÆ.

F. GUILTEL, C.R. Ac. Sci. cxxx, pp. 1773-1777, writes on the kidneys of *Lepadogaster gouani*.
Mirbelia gracilis, Canestr. On a specimen from the Adriatic: KOLOMBATOVIC, Druge Zool. Vij. Dalm. p. 18.

LABYRINTHICI.

C. GRIGORIAN, Zool. Anz. xxiii, pp. 161-170, figg., investigates the structure of the so-called 'labyrinthic' accessory organ of respiration in the *Osteomorpha*, *Anabantidae*, and *Ophiocephalidae*, and T. SCHACHMAGONOW, t. c. pp. 385-387, figg., points out the relation between it and the air-bladder in *Betta pugnax*.

Ctenopoma, Ptrs. On the specimens in the Paris Museum: PELLEGREN, Bull. Mus. Paris 1899, pp. 357-364; *C. ocellatum* and *acutirostre*, pp. 359 & 360 [*Anabas weissii*, Blgr.—REC.], and *denticulatum*, p. 361, spp. nn., id. ibid. French Congo.

LOPHOTIDÆ.

Lophotes cepedianus, Giorna. On a specimen from the Cape of Good Hope: BOULENGER, Mar. Invest. S. Afr., No. 3, p. 13, pl. —.

NOTACANTHIDÆ.

✓ *Pronotacanthus*, g. n., for *Anguilla sahel-almae*, J. W. Davis (foss.), A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 322.

ACANTHOPTERYGII PHARYNGOGNATHI.

POMACENTRIDÆ.

Eupomacentrus nigricans, Lacép., redescribed by H. W. FOWLER, P. Ac. Philad. 1900, p. 503.

Glypheisodon limbatus, C. & V., redescribed by H. W. FOWLER, t. c. p. 504.
Amphiprion lateronatus, sp. n., WAITE, Rec. Austral. Mus. iii, p. 201, pl. xxiv, Lord Howe Id.

LABRIDÆ.

Labrus maculatus, Bl. and *melops*, L. Note by GARSTANG & BYRNE, J. Mar. Biol. Ass. (2) vi, p. 214.

Doratonotus decoris, sp. n., EVERMANN & MARSH, Rep. U. S. Fish Comm. f. 1899, p. 354, Puerto Rico.

Sparisoma frondosum, Cuv., redescribed by GILBERT, P. Washington Ac. ii, p. 174.

Anampses curieri, Q. & G., redescribed by H. W. FOWLER, P. Ac. Philad. 1900, p. 506.

Hemipteronotus copei, sp. n., H. W. FOWLER, t. c. p. 508, pl. xx, fig. 1, Sandwich Ids.

Coris aygula, Lacép., redescribed by H. W. FOWLER, t. c. p. 510.

Iridio poeyi, Stdr. (*tirschii*, Jord. & Everm.). Note by GILBERT, P. Washington Ac. ii, p. 173.

CICHLIDÆ.

Paratilapia multidens, sp. n., PELLEGRIN, Bull. Mus. Paris 1900, p. 98, French Congo.

Pelmatochromis dimidiatus, sp. n., PELLEGRIN, t. c. p. 99, Ubangi [= *Pseudoplesiops nudiceps*, Blgr., var.—REC.]; *P. lepidurus*, sp. n., PELLEGRIN, t. c. p. 275, Congo [= *P. lateralis*, Blgr.—REC.]; *P. polylepis*, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 143, pl. lii, fig. 1, L. Tanganyika.

Acarus pallida, Heck. Note by VAILLANT, Arch. Mus. Paris (4) ii, p. 134. *Cichlasoma ueindachneri*, sp. n., JORDAN & SNYDER, Bull. U.S. Fish Comm. f. 1899, p. 143, fig., R. Verde, near Rascon, Mexico.

Heros istlanus, sp. n., JORDAN & SNYDER, t. c. p. 144, fig., R. Ixtla, Mexico. *Neotroplus carpintis*, sp. n., JORDAN & SNYDER, t. c. p. 146, fig., Laguna de Carpinte, Tamanlipas, Mexico.

Tilapia bilineata, p. 276, Congo, and *sexfasciata*, p. 277, Central Africa, spp. nn., PELLEGRIN, Bull. Mus. Paris 1900.

Tropheus annectens, sp. n., BOULENGER, t. c. p. 148, pl. lii, fig. 2, L. Tanganyika.

✓ *Spathodus*, g. n., allied to *Eretmodus*, Blgr., for *S. erythrodon*, sp. n., BOULENGER, t. c. p. 152, pl. lii, fig. 2, L. Tanganyika.

Plecodus paradoxus, Blgr., figured by BOULENGER, t. c. pl. lii, fig. 4.

ANACANTHINI.

LYCODIDÆ.

Lycodes, Reinh. Synopsis of the species, which are reduced to four: SMITT, Ann. Nat. Hist. (7) v, p. 56; *L. flavus*, sp. n., BOULENGER, op. cit. vi, p. 53, Falkland Ids. *Brotula townsendi*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 518, pl. xx, fig. 3, Sandwich Ids.

GADIDÆ.

Gadus esmarkii, Nilss. On a specimen from the English Channel: GARSTANG, J. Mar. Biol. Ass. (2) vi, p. 274.

Merluccius vulgaris, Flem. On an albino: GARSTANG, t. c. p. 275.

Raniceps trifurcatus, Turt. On two specimens from off Berwick: G. BOLAM, Hist. Berwick Club xvii, p. 112.

Bromophycis verrillii, sp. n., S. GARMAN, Tr. Connect. Ac. x, p. 511, Bermudas.

OPHIIDIIDÆ.

Neobythites pterotus, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxix, fig. 1.

Succogaster maculata, Alcock, figured by ALCOCK, t. c. fig. 2.

Fierasfer parvipinnis, Kaup, redescribed and figured by H. W. FOWLER, P. Ac. Philad. 1900, p. 523, pl. xix, fig. 5.

MACRURIDÆ.

Macrurus polylepis, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxix, fig. 4; *M. lecointei*, sp. n., DOLLO, Bull. Mus. Belg. 1900, p. 222, Antarctic Ocean.

- Caenorhynchus kishinouyei*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 376, pl. xx, Japan.
 ✓ *Dolloa*, n. n. for *Moseleya*, Jord. nec Quelch. JORDAN, Amer. Natural. xxxiv, p. 897.

PLEURONECTIDÆ.

- H. M. KYLE, Rep. Fish. Board Scotland xviii, pp. 189-241, pls. ix & x, discusses the classification and geographical distribution of the Flat-Fishes.
 H. M. KYLE, J. Linn. Soc. xxvii, pp. 541-556, pl. xxxviii, describes the nasal organ of *Cynoglossus semilaevis*, Gthr.
Hippoglossus vulgaris, Flem. On specimens from Cherbourg: JOUAN, Mem. Soc. Cherbourg xxxi, p. 223.
Verasper otakii, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 378, Tokyo, Japan.
Pleuronectes platessa, L. On growth and variations: H. M. KYLE, Rep. Fish. Board Scotland xviii, p. 189, pls. ix & x ; *P. Jesus*, L. On its variations: DUNCKER, Wiss. Meeresuntersuch. (2) iii, p. 333, figg., pls. xi-xiv, and Zool. Anz. xxiii, p. 141. Note on the habits: R. L. ASCROFT, P. Liverp. biol. Soc. xiv, p. 174. On a sinistral specimen: TRAQUAIR, Ann. Scott. Nat. Hist. 1900, p. 89, fig.
 ✓ *Kareius*, g. n., for *Liopsetta scutifer*, Stdr.: JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 379.
 ✓ *Usinoetia*, g. n., for *Solea japonica*, Temm. & Schleg.: JORDAN & SNYDER, t. c. p. 389.
 ✓ *Zebrias*, g. n., for *Solea zebra*, Temm. & Schleg.: JORDAN & SNYDER, l. c.
 ✓ *Areliscus*, g. n., for *Solea joyneri*, Gthr.: JORDAN & SNYDER, l. c.
Synaptura marginata, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 11, pl. —, Cape of Good Hope.

PHYSOSTOMI.

SILURIDÆ.

- Clarias budgetti*, sp. n., BOULENGER, P. Z. S. 1900, p. 513, Gambia ; *C. breviceps*, sp. n., id., Ann. Mus. Congo, Zool. i, p. 135, pl. xlvi, fig. 6, Mayombe, Congo.
Eutropius grenfelli, p. 137, pl. l, fig. 1, Congo, *debauwi*, p. 138, pl. l, fig. 2, Uerre, Congo, and *lemairei*, p. 138, pl. l, fig. 3, Katsanga, spp. nn., BOULENGER, Ann. Mus. Congo, Zool. i.
Amiurus prosthiatus, Cope. Note by H. W. FOWLER, P. Ac. Philad. 1900, p. 352.
 ✓ *Ictalurus*, g. n., allied to *Ictalurus*, for *I. balsanus*, sp. n., JORDAN & SNYDER, Bull. U. S. Fish Comm. f. 1899, p. 118, figg., R. Ixtla, Mexico.
Chrysichthys myriodon, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 139, pl. li, L. Tanganyika ; *C. brachynema*, sp. n., id., Ann. Nat. Hist. (7) vi, p. 480, L. Tanganyika.
Gephyroglanis ogensis, sp. n., PELLEGRIN, Bull. Mus. Paris 1900, p. 180, Ogowe.
Arius physcanthus, Vaill., described and figured by VAILLANT, Arch. Mus. Paris (4) ii, p. 128, pl. vii, fig. 1 ; *A. bleekeri*, sp. n., POFTA, Notes Leyden Mus. xxii, p. 71, Malay Archipelago.
Synodontis ocellifer, sp. n., BOULENGER, P. Z. S. 1900, p. 514, Gambia ; *S. granulosus*, sp. n., id., Ann. Nat. Hist. (7) vi, p. 480, L. Tanganyika.

- Chiloglanis*, Peters. Genus and type species characterized by BOULENGER, Ann. Nat. Hist. (7) vi, p. 521; *C. niloticus*, sp. n., id. ibid. p. 522, Arko, Soudan.
- ✓ *Euchilichthys*, g. n. for *Atopochilus guentheri*, Schilth., and *Chiloglanis dybowskii*, Vaill. BOULENGER, t. c. p. 523.
- Atopochilus*, Sauv. Genus and type species characterized by BOULENGER, t. c. p. 524.
- Mochocetus*, Joannis (= *Rhinoglanis*, Gthr.). Genus and type species characterized by BOULENGER, t. c. p. 525.
- Doumea*, Sauv. Genus and type species characterized by BOULENGER, t. c. p. 526; *D. scaphyrhynchura*, Vaillant, described by PELLEGRIN, Bull. Mus. Paris 1900, p. 181.
- ✓ *Phractura*, n. n. for *Peltura*, Perugia nec M.-Edw.: BOULENGER, t. c. p. 527; *P. bovei*, Perugia, and *scaphyrhynchura*, Vaill., recharacterized, id. ibid. p. 528.
- ✓ *Andersonia*, g. n., allied to the preceding: BOULENGER, t. c. p. 528, for *A. leptura*, sp. n., id. ibid. p. 529, Koshek, Soudan.
- Plecodomus heylundi*, sp. n., BOULENGER, Ann. Nat. Hist. (7) v, p. 165, S. Paulo, Brazil.
- Loricaria latirostris* and *paulina*, spp. nn., BOULENGER, t. c. pp. 165 & 166, S. Paulo, Brazil.

SCOPELIDÆ.

- Odontostomus atratus*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxiii, fig. 3.
- Scopelus pyrobelus*, Alcock, figured by ALCOCK, op. cit. pl. xxx, fig. 3.
- Harpodon squamosus*, Alcock, figured by ALCOCK, l. c. fig. 1.
- Bathypterois insularum*, Alcock, figured by ALCOCK, op. cit. pl. xxxii, fig. 1.
- Synodus sharpi*, sp. n., H. W. FOWLER, P. Ac. Philad. 1900, p. 497, pl. xix, fig. 2, Sandwich Ids.

CYPRINIDÆ.

- V. GRATZIANOW, Zool. Anz. xxiii, pp. 66-73, figg., writes on the histological structure of the pharyngeal horny plate of Cyprinids.
- L. BLOCH, Jena. Zeitschr. xxxiv, pp. 1-57, figg., pls. i & ii, writes on the air-bladder and the Weberian ossicles of *Nemachilus barbatulus*.
- E. BATAILLON, C.R. Ass. Franc. xxviii, ii, pp. 533-537, has obtained early embryonic stages by crossing *Leuciscus phoxinus* with *Cyprinus auratus* and *Cobitis tenuis*.
- Gymnotomus lepturus*, sp. n., BOULENGER, P. Z. S. 1899, p. 961, pl. lxix, fig. 1, Hainan.
- Aspiotoma zurudnyi*, Nik., is redescribed and referred to *Schizothorax* by NIKOLSKI, Annaire Mus. St. Petersb. iv, p. 409.
- Discognathus lamtu*, Ham. Buch., and *variabilis*, Heck. Notes on Persian specimens by NIKOLSKI, t. c. pp. 411 & 412; *D. rossicus*, sp. n., NIKOLSKI, op. cit. v, p. 239, Transcaspia and Persia.
- Chondrostoma nasus*, L. On its occurrence in the Loire: PELLEGRIN, Bull. Soc. zool. France xxv, p. 64.
- Capoëta amir*, Heck. (?). Note by NIKOLSKI, op. cit. v, p. 408; *C. tanganyicae*, sp. n., BOULENGER, Ann. Nat. Hist. (7) vi, p. 478, L. Tanganyika.
- Barbus hampurensis*, sp. n., NIKOLSKI, op. cit. iv, p. 410, Bampur R., Persia; *B. katanga*, p. 132, pl. xlvi, fig. 1, Katanga, and *trondolepis*, p. 133, pl. xlvi, fig. 2, L. Tanganyika, spp. nn., BOULENGER.

- Ann. Mus. Congo, Zool.* i; *B. platyrhinus* and *serrifer*, spp. nn., BOULENGER, Ann. Nat. Hist. (7) vi, p. 479, L. Tanganyika; *B. analis*, sp. n., id. ibid., L. Kivu and Rusisi R.
- Gobio biwa* and *mayedæ*, spp. nn., JORDAN & SNYDER, P. U. S. Mus. xxiii, pp. 340 & 342, pl. ix, figg. 1 & 2, L. Biwa, Japan.
- Leuciscus idus*, L., *rutilus*, L., *virgo*, Heck., and *frixi*, Nordm. Notes on Caspian specimens: LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 11; *L. verillifer*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 54, pl. iii, fig. 3, Brown Coal of Bohemia; *L. turneri*, sp. n. (foss.), LUCAS, P. U. S. Mus. xxiii, p. 333, Miocene of Nevada.
- Notropis rasconis*, p. 121, fig., R. Verde, nr. Rascon, Mexico, and *calientis*, p. 122, fig., R. Verde, Aguas Calientes, Mexico, spp. nn., JORDAN & SNYDER, Bull. U.S. Fish Comm. f. 1899.
- ✓ *Xystrosus*, g. n., allied to *Notropis*, for *X. poposche*, sp. n., JORDAN & SNYDER, t. c. p. 123, figg., Laguna de Chapala, Jalisco, Mexico.
- ✓ *Falcula*, g. n., also allied to *Notropis*, for *F. chapalæ*, sp. n., JORDAN & SNYDER, t. c. p. 124, fig., Laguna de Chapala.
- Tinca obturcata*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 49, pl. iii, fig. 1, Brown Coal of Bohemia.
- Acheilognathus steenackeri*, Sauv. = *A. rhombeum*, Temm. & Schleg., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 343.
- Abramis vimba*, L., *blicca*, Bl., *brama*, L., *ballerus*, L., and *sopha*, Pall. Notes on Caspian specimens by LÖNNBERG, Bih. Svenska Ac. xxvi, iv, No. 8, p. 19.
- Alburnus chalcoides*, Giildenst. Note by LÖNNBERG, t. c. p. 17; *A. steindachneri*, sp. n. (foss.), LAUBE, Abh. Ver. Lotos ii, p. 51, pl. iii, fig. 2, Brown Coal of Bohemia.
- ✓ *Otakia*, g. n., probably related to *Pseudorasbora* and *Tribolodon*, for *O. rasborina*, sp. n., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 345, pl. ix, fig. 3, L. Biwa, Japan.
- ✓ *Iochikauia*, g. n., apparently related to *Xenocypris*, for *Opsariichthys steenackeri*, Sauv. JORDAN & SNYDER, t. c. p. 346, pl. x.
- Barilius hainanensis*, sp. n., BOULENGER, P. Z. S. 1899, p. 961, pl. lxix, fig. 2, Hainan; *B. weeksii* and *weyensi*, spp. nn., id. Ann. Mus. Congo, Zool. i, pp. 134 & 135, pl. xlvi, figg. 4 & 5, Upper Congo; *B. moorii*, and *tanganicae*, spp. nn., id. Ann. Nat. Hist. (7) vi, p. 480, L. Tanganyika.
- ✓ *Leptocypris*, g. n., allied to *Barilius*, Ham. Buch. BOULENGER, Ann. Mus. Congo, Zool. i, p. 133, for *L. modestus*, sp. n., id. ibid. p. 134, pl. xlvi, fig. 3, Upper Congo.
- Cobitis fossilia*, L. Recorded from the Moselle valley by L. MAILLARD, Bull. Soc. Nancy (3) i, p. 176. On a monstrous, gibbose specimen: A. GIARD, C.R. Soc. Biol. lii, p. 93.
- Nemachilus toni*, Dyb., figured by L. S. BERG, Annaire Mus. St. Petersb. v, pl. viii, fig. 4.
- Glanioopsis hanitschi*, Blgr., figured by HANITSCH, J. Straits Asiat. Soc. xxxiv, pl. ii, fig. 2.

CHARACINIDÆ.

- Anostomus borellii*, sp. n., BOULENGER, Boll. Mus. Torino xv, No. 370, p. 2, Matto Grosso, Brazil.
- Pyrrhulina filamentosa*, C. & V., described and figured by VAILLANT, Arch. Mus. Paris (4) ii, p. 132, pl. vii, fig. 3.
- Tetragonopterus bahiensis*, Stdr. Note by GILBERT, P. Washington Ac. ii, p. 162; *T. callistus*, sp. n., BOULENGER, Boll. Mus. Torino xv, No. 370, p. 2, Matto Grosso, Brazil.

- Chirodon calliurus*, sp. n., BOULENGER, t. c. p. 3, Matto Grosso, Brazil.
Bryconathiope boulegeri, sp. n., PELLEGRIN, Bull. Mus. Paris 1900, p. 101,
 Ogowe [= *B. microstoma*, Gthr.—REC.]
Alestes lateralis, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 130,
 pl. xlviii, fig. 2, L. Dilolo, Katanga.
Nannocharax elongatus, sp. n., BOULENGER, t. c. p. 131, pl. xlviii, fig. 3,
 Upper Congo.
✓ *Xenocharax crassus*, sp. n., PELLEGRIN, t. c. p. 100, French Congo.
✓ *Mesoborus*, g. n., allied to *Paraphago*, Blgr.; PELLEGRIN, t. c. p. 179; *M. crocodilus*, sp. n., id. ibid. p. 179, Diéle, French Congo.

CYPRINODONTIDÆ.

- Characodon encaustus*, sp. n., JORDAN & SNYDER, Bull. U. S. Fish Comm. f. 1899, p. 126, fig., Laguna de Chapala, Jalisco, Mexico.
✓ *Xenendum*, g. n., allied to *Characodon*. JORDAN & SNYDER, t. c. p. 127; *X. caliente*, p. 127, fig., R. Verde, nr. Aguas Calientes, Mexico, and *xaliscone*, p. 128, fig., Laguna de Chapala, Jalisco, Mexico, spp. nn., JORDAN & SNYDER, t. c.
Poecilia limantouri, sp. n., JORDAN & SNYDER, t. c. p. 129, fig., Tampico, Tamaulipas, Mexico.
Xiphophorus montezumæ, sp. n., JORDAN & SNYDER, t. c. p. 131, fig., R. Verde, near Rascon, Mexico.
Rivulus geayi, Vaill., described and figured by VAILLANT, Arch. Mus. Paris (4) ii, p. 130, pl. vii, fig. 2.

SCOMBRESOCIDÆ.

- Hemirhamphus depauperatus*, Lay & Benn., redescribed and figured by H. W. FOWLER, P. Ac. Philad. 1900, p. 499, pl. xix, fig. 3.
Exocoetus doderleinii, Stdr. = *E. agoo*, Temm. & Schleg., JORDAN & SNYDER, P. U. S. Mus. xxiii, p. 351.

MORMYRIDÆ.

- Mormyrops vaillanti*, sp. n., PELLEGRIN, Bull. Mus. Paris 1899, p. 362, Diéle, French Congo [= *M. nigricans*, Blgr.—REC.]
Marcusenius cabra, sp. n., BOULENGER, Ann. Mus. Congo, Zool. i, p. 130, pl. xlviii, fig. 1, Mayombe, Congo.

STERNOPTYCHIDÆ.

- Chauliodus pammelas*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxx, fig. 4.

STOMIATIDÆ.

- Photostomias atrox*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxx, fig. 2.

SALMONIDÆ.

- G. E. H. BARRETT-HAMILTON remarks on the nuptial characters of certain Salmonids, as a means of explaining a possible mode of origin of some of the secondary sexual characters in Animals. P. Cambridge Soc. x, pp. 279–285.

J. K. BARTON, J. Anat. Physiol. norm. path. (2) xiv, pp. 295–300, pls. xl–xliii, has made an examination of the digestive tract in *Salmo salar* with the result of disproving the existence of a desquamative catarrh of the mucous lining of the intestine which was supposed to take place in Salmon re-entering rivers.—Remarks by GULLAND, op. cit. xv, pp. 114–116.

K. LAMPERT, Allgem. Fischerei-Zeitung 1900, No. 15, remarks on the food of Trout and Charr in Germany.

Salmo salar cappius, Kessl. Note by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 25; *S. fario*, L. On deformed specimens: TRAQTAIR, Ann. Scott. Nat. Hist. 1900, p. 87, pl. i; *S. fluviatilis*, Pall., described by WARPACHOWSKI, Annaire Mus. St. Petersb. iv, p. 370; *S. irideus*, Gibb. On its introduction in France: LETACQ, Bull. Soc. Rouen (4) xxxv, p. 145.

Stenodus leucichthys, Güldenst. Note by LÖNNBERG, t. c. p. 26; *S. nelma*, Pall., described by WARPACHOWSKI, Annaire Mus. St. Petersb. iv, p. 329.

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Engraulis holodon, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 12, pl. —, fig. 3, Cape of Good Hope.

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Lycengraulis grossidens, Cuv. Note by GILBERT, P. Washington Ac. ii, p. 163.

Clupea harengus, L. Biological observations in Norway: HEINCKE & HENKING, Abh. Deutsch. Seefisch.-Ver. vi, p. 75; *C. sapidissima*, Wils. Note on the habits: R. L. ASCROFT, P. Liverp. biol. Soc. xiv, p. 173; *C. delicatula*, Nordn., *kessleri*, Grimm, and *saposchnikovi*, Grimm. Notes by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 28.

Aulolepis typus, Ag. (foss.). Further notes by A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 324, pl. ix, fig. 2.

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PLETHODIDÆ.

✓ *Thryptodus*, g. n., allied to *Plethodus*, A. S. Woodw., LOOMIS, Palaeontogr. xlvi, p. 229; *P. zitteli* and *rotundus*, spp. nn. (foss.), id. ibid. pp. 234 & 235, pl. xxii, Chalk of Kansas.

- ✓ *Pseudothryptodus*, g. n., also allied to *Plethodus*: LOOMIS, t. c. p. 225, for *P. intermedius*, sp. n. (foss.), id. ibid. p. 236, pl. xxii, figg. 3-8, Chalk of Kansas.

CHIROCENTRIDÆ.

Ichthyodectes, Cope (foss.). Genus monographed by LOOMIS, Palæontogr. xlvi, p. 236, figg., pl. xxiii.

Portheus, Cope (foss.). Remarks by LOOMIS, t. c. p. 246.

Sauvodon, Hays (foss.). Remarks by LOOMIS, t. c. p. 247; *S. pygmaeus*, sp. n., id. ibid. p. 248, pl. xxiii, fig. 10, Chalk of Kansas.

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Xenodermichthys guentheri, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxii, fig. 2.

Alepocephalus edentulus, Alcock, figured by ALCOCK, l. c. fig. 4.

Leptoderma affine, Alcock, figured by ALCOCK, l. c. fig. 3.

HALOSAURIDÆ.

Halosaurus parvipinnis, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxiii, fig. 1.

Halosaurichthys nigerrimus, Alcock, figured by ALCOCK, l. c. fig. 2.

NOTOPTERIDÆ.

On the air-bladder: T. W. BRIDGE, J. Linn. Soc. xxvii, pp. 503-540, pls. xxxvi & xxxvii.

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✓ *Urenchelys*, g. n., for *Anguilla hakelensis*, J. W. DAVIS (foss.), and *U. anglicus*, sp. n., from the Lower Chalk of Clayton, Sussex: A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 392, pl. ix, fig. 1.

✓ *Megalopharynx*, g. n., allied to *Saccopharynx*, for a deep-sea fish from the Gulf of Guinea: BRAUER, in CHUN, Aus den Tiefen des Welt- p. 521, fig.

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Syngnathus bucculentus, Rathke. Note by LÖNNBERG, Bih. Svenska Ak. xxvi, iv, No. 8, p. 8.

Hippocampus capensis, sp. n., BOULENGER, Mar. Invest. S. Afr. No. 8, p. 11, pl. —, fig. 2, Cape of Good Hope; *H. jayakari*, sp. n., id. Ann. Nat. Hist. (7) vi, p. 51, fig., Muscat.

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Halimochirurgus centriscooides, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxxi, fig. 3.

Monacanthus radiatus, sp. n., POPTA, Notes Leyden Mus. xxii, p. 126, figg., Malay Archipelago.

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Ranzania makua, Jenk. Note by H. W. FOWLER, P. Ac. Philad. 1900, p. 514.

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Coelacanthus lunensis, Teller (foss.). Description and figure of various remains: O. M. REIS, Jahrb. geol. Reichsanst. I, p. 187, pls. ix & x.
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Holoptychius monilifer, sp. n. (foss.), A. S. WOODWARD, Bib. Svenska Ak. xxv, iv, No. 5, p. 3, pl. —, fig. 1, Upper Devonian of Spitzbergen.

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- A. PERRET, Rev. Scient. (4) xiii, pp. 786–788, reviews our knowledge of the characters and habits of the existing Lung-fishes.
 J. G. KERR, Phil. Trans. cxcli, pp. 299–330, pls. viii–xii, describes the egg and development of *Lepidosiren paradoxa*.
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ARTHRODIRA.

Rhynchodus emigratus, sp. n., F. v. HUENE, N. Jahrb. Min. 1900, i, p. 65, fig., Devonian of Eifel district, Germany.

OSTRACOPHORI.

- Cephalaspis lornensis*, sp. n., TRAQUAIR, Tr. R. Soc. Edinb. xxxix, p. 591, pl. —, Old Red Sandstone, Oban, Scotland.
 ✓ *Euphanerops*, g. n., allied to *Cephalaspis*, for *E. longævus*, sp. n., A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 416, pl. x, fig. 1, Upper Devonian of Scaumenac Bay, Canada.
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Chimera phantasma, sp. n., JORDAN & SNEYDER, P. — p. 338, Japan.

ELASMOBRANCHII.

- CAMPBELL BROWN, Palæontogr. xlvi, p. 149, dealing with the structure of the Hybodont Sharks, remarks on their systematic position and on the supposed lines of evolution of the primitive Selachians.
- R. BURCKHARDT, Anat. Anz. xviii, pp. 488-492, figg., remarks on the characters of the Læmargidæ.
- H. C. REDEKE, Tijdschr. Nederland. Dierk. Ver. (2) vi, pp. 284-303, pl. xii, investigates the structure of mucous membrane of the stomach and intestine of Selachians.
- H. C. REDEKE, Anat. Anz. xvii, pp. 146-159, figg., remarks on the digestive tract of Selachians, with reference to the so-called 'Bursa Entiana.'
- R. C. PUNNETT, Phil. Trans. cxii, pp. 331-352, pl. xiii, has investigated the formation of the pelvic plexus in *Mustelus*, with especial reference to the Nervus collector. Abstract, Zool. Anz. xxiii, pp. 14 & 15.
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- E. WEINLAND, SB. Ges. Munchen xvi, pp. 27-32, writes on the presence of two kinds of gastric juices in Skates of the genus *Raia*.
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- Hemipristis serra*, Ag. (foss.). Tooth figured by A. S. WOODWARD, t. c. pl. i, fig. 11.
- Corax curvata*, sp. n. (foss.), WILLISTON, Kansas quart. ix, p. 41, pl. xii, figs. 7 & 8, Cretaceous of Kansas.

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- Odontaspis elegans*, Ag. (foss.). Teeth figured by A. S. WOODWARD, t. c. pl. i, figg. 1-5.
- Oxyrhina hastalis*, Ag. (foss.). Teeth figured by A. S. WOODWARD, t. c. figg. 6-8.
- Alopis vulpes*, Gm. On a specimen from the Firth of Forth: J. STIRTON, Ann. Scott. Nat. Hist. 1900, p. 17, fig.
- Scyllium quagga*, Alcock, figured by ALCOCK, Ill. Zool. Investig. pl. xxvii, fig. 1; *S. rugosum*, *planidens*, and *gracilis*, spp. nn. (foss.), WILLISTON, Kansas quart. ix, p. 35, pl. vi, figg. 5-7, Cretaceous of Kansas.
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- Deltodus croftoni*, sp. n. (foss.), A. S. WOODWARD, Ann. Nat. Hist. (7) v, p. 419, pl. x, fig. 2, Lower Carboniferous of Yorkshire.
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- C. W. GREENE, Amer. Journ. Physiol. iii, pp. 366-382, figg., deals with the anatomy and physiology of the caudal heart of *Bdellostoma (Polistotrema) stouti*.
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- Palaeospondylus*, Traq., is regarded by GRAHAM KERR, P. Cambridge Soc. x, p. 298, as possibly a young Dipnoan, or the young of some form closely allied to the Dipnoi.
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LEPTOCARDII.

- E. BURCHARDT, Jena. Zeitschr. xxiv, pp. 719-832, pls. xviii-xxvi, has a paper on the structure of *Branchiostoma lanceolatum*, followed by a full bibliographical index to all publications on the subject.
- H. JOSEPH, Arb. Inst. Wien xii, pp. 99-132, figg., 1 pl., investigates some points in the histology of the Amphioxus.
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VI. TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.R.S.

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INTRODUCTION.

THE continuation of SEELIGER's section of "Bronn" is an important contribution to the literature of the Tunicata. DAMAS, WILLEY, and SELYS-LONGCHAMPS give us interesting studies of the development and growth in complication of the Ascidian's characteristic organ the branchial sac. HARTMEYER, MICHAELSEN, SLUITER, and RITTER have made important additions to our knowledge of speciography; while MIRALDI'S throw welcome light upon several vexed points in ...

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II. SUBJECT-INDEX.

A. ANATOMY.

CAULLERY describes two species of Clavelinids from the Paris Museum which although presenting the structure of *Clavelina* have the whole body of the Ascidiocozooids completely immersed in a massive common test. He places them in a new genus *Synclavellea*, and cites them as an additional reason for abandoning Milne-Edwards' group the Social Ascidiarians.

SEELIGER (17) has some new observations on the structure of the tail in Appendicularians, and does not find that the segmentation of the nervous system completely corresponds with that of the muscle bands. He does not consider that there is true segmentation like that of *Amphioxus* nor that there is evidence for the view that Tunicata are derived from segmented ancestors. The connection with the Vertebrata must therefore, he argues, have been very far back.

DELLA VALLE (3) describes movements of contraction in the ampullæ of the ectodermal processes of *Diplosoma*.

MICHAELSEN now gives us a fuller account of the Ascidiarians from the Magellan Straits and South Georgia region he described briefly a few years ago. He also adds a few new species, breaks up several old species into varieties, or forms, and constitutes several new generic groups.

The last published section of SEELIGER's memoir on the Tunicata in "Bonn" deals with the branchial sac and its associated organs the endostyle, the dorsal lamina, the peripharyngeal bands, the dorsal tubercle, and the sense-organs.

HARTMEYER in describing one of his new Ascidiarians from Ternate discusses very fully the relations of the genera *Ascidia* and *Ovula* gives a classification of the family Asciidiidae.

MERCALF gives a very full description and associated parts of *Ciona intestinalis* compare with the gland he found is

of the neural gland is formed by the disintegration of cells proliferated from the endothelium of the gland. He demonstrates the innervation of the ciliated funnel by a large nerve from the ganglion in *Boltenia*. The function of the neural gland is regarded as quite unknown. *Octacnemus* he considers as belonging to the Clavelinidae rather than the Salpidae. He describes a new species of *Bostrichobranchus* and clears up some allied species of Molgulidae. The abbreviated development of a *Molgula* is described leading to the suppression of the larval stage; and many other points in anatomy and histology are discussed.

PIZON deals with the history of the colony in the Botryllidae and the Distomidae, the formation of the oozoid and of blastozooids and their duration and retrogression, the mechanism of circulation and other points in connection with the colonial life.

B. EMBRYOLOGY.

WILLEY gives us some interesting observations on the development of the stigmata in the branchial sac of Ascidians. In *Clavelina* and other forms the stigmata arise each by separate perforations of the pharyngeal wall. In Asciidae two pairs of primary stigmata are formed. These increase to six pairs which become subdivided to form the secondary and tertiary stigmata of the adult. *Botryllus* is intermediate in some respects. Willey describes the formation of the stigmata in *Molgula manhattensis* and compares it with the process described in other types. He comes to the conclusion that the formation of protostigmata by abstraction is probably primitive, but no longer occurs in *Botryllus*, while the subdivision of the protostigmata has dropped out of the ontogeny of *Clavelina*.

M. DE SELYS LONGCHAMPS and DAMAS in a detailed account of the post-embryonic development of *Molgula ampulloides* deal chiefly with the formation and modification of the protostigmata in the branchial sac, and with the development and structure of the gonad. They give a good account of the formation of the spiral stigmata and a full description of the adult branchial sac. They show the persistence in the adult of a larval sense organ, the pigmented otolith, in the hypophysial gland. The authors had a short preliminary communication under the same title in Bull. Ac. Belgique for June 1900.

DAMAS in his paper on *Ciona* gives us a careful study of the detailed arrangement of vessels of different sizes in the branchial sac, and of the distribution of the muscle bundles in the wall of the sac. He also deals with the development of the stigmata and other allied matters.

DE SELYS-LONGCHAMPS in his account of the development of the pericardium and heart and epicardium in *Ciona* establishes in the main the results of Willey and of Damas. The epicardium and the pericardium arise independently at very different periods in *Ciona*, unlike other forms that have been examined, and the rudiment of the pericardium is not formed by constriction from the bottom of the right procardium. In fact there is no procardium in *Ciona*, as according to this author the cardio-pericardiac complex is formed quite independently of the epicardia and at a much earlier stage in the life-history.

TODARO, dealing with the segmentation of the egg of *Salpa*, describes the remarkable relations between the nutrient (lecithin) cells and the true blastomeres and shows how the former nourish and support the latter for a long period before they become germ layers.

C. GEOGRAPHICAL DISTRIBUTION.

LOHMANN gives an account of the Arctic species of Appendiculariidae in connection with the German North Polar Expedition of 1898. He discusses 4 species, *Fritillaria borealis*, *Oikopleura vanhoffeni*, *O. labradoriensis* and *O. parva*.

SLUITER describes a number of new species from the Pacific obtained in Schauinsland's expedition. Twenty-five out of the 36 species are new to science.

HERDMAN gives a list of 44 species of Tunicata which he identified at Naples in March and April 1900.

RITTER describes 15 species of Ascidians from Puget Sound, of which 7 are new to science.

HARTMEYER describes 5 species of simple Ascidians from Ternate of which 4 are new species and one a new genus and the type of a new subfamily the Corellascidiinae.

RANKIN enumerates 26 species of Tunicata found in the neighbourhood of Millport in the Clyde sea-area. Several of these are new to the locality and 3 are new to science.

III. SYSTEMATIC.

LARVACEA.

Fritillaria gracilis, RANKIN, p. 43, n. sp.

ASCIDIACEA.

CLAVELINIDÆ.

Synclavella, n. gen., CAULLERY, p. 1420, for *S. lessoni*, *australis*, n. spp.

ASCIDIIDÆ.

Corellascidiinae, nov. subfam., HARTMEYER, p. 241.

Corellascidia, n. gen., p. 235 for *C. herdmanni*, n. sp., p. 236, HARTMEYER.

CYNTHIIDÆ.

Cynthia superba, p. 590, *deani*, p. 592, *macrosiphonus*, p. 597, *erecta*, p. 598, RITTER; *C. stubenrauchi*, p. 102, *pessleri*, p. 106, MICHAELSEN : n. spp.

Microcosmus ternatanus, HARTMEYER, p. 4, n. sp.

STYELIDÆ.

Styela stimpsoni, RITTER, p. 602; *S. depressa*, HA=curzei, MICHAELSEN, p. 94 : n. spp.

Polycarpa aterrima, n. sp., HARTMEYER, -

POLYSTYELIDÆ.

- Allaxocarpa*, n. gen., MICHAELSEN, p. 25.
A. zschaui, p. 32, *emilionis*, p. 35, *intermedia*, p. 39, *bridgesi*, p. 41,
 MICHAELSEN, n. spp.
Gynandrocarpa, n. gen., MICHAELSEN, p. 29.
Polyzoa gordiana, p. 49, *falcklandica*, p. 52, *lennoxensis*, p. 56, MICHAELSEN,
 n. spp.

MOLGULIDÆ.

- Molgula kophameli*, p. 125, *pulchra*, p. 128, *georgiana*, p. 132, MICHAELSEN,
 n. spp.
Paramolgula guttula, p. 135, *patagonica*, p. 141, MICHAELSEN, n. spp.
Bostrichobranchus molguloides, n. sp., METCALF, p. 586.

DISTOMIDÆ.

- Distoma molls*, p. 605, *lobata*, p. 606, RITTER, n. spp.

POLYCLINIDÆ.

- Glossophorum variabile*, RANKIN, p. 50, n. sp.
Poammaplidium molle, RANKIN, p. 51, n. sp.

VII. MOLLUSCA.

BY

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Assisted by E. A. SMITH, F.Z.S., and G. C. CRICK, F.G.S.

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INTRODUCTION.

THE stream of literature bearing on the Mollusca appears to have flowed as steadily during 1900 as in past years.

We have to chronicle two works dealing with the Mollusca in general, namely an English and revised edition of KORSCHELT & HEDER's (272) 'Text-book of Embryology,' and a new edition of LANG's (275) 'Lehrbuch,' written by HESCHELER. TRYON's Manual (529) has regularly appeared, PILSBRY having dealt with the Australasian *Bulimulidae* and with *Amphidromus*, which he refers to the *Helicidae*. Nine parts of the 'Conchylien-Cabinet' of MARTINI & CHEMNITZ (311) have been issued, relating to the *Eulimidae*, *Buliminidae*, *Auriculidae*, and Zonitoid snails: they are of

somewhat unequal merit, and we note that CLESSIN has bestowed the same specific name on two apparently distinct species within seven pages. MARTENS (309) has now practically completed the molluscan portion of the 'Biologia Centrali-Americana' and has commenced some supplemental notes, rendered the more necessary by the fact that ten years have elapsed since the work was commenced. One part of the 'Atlas' of HIDALGO's (224) 'Obras Malacologicas'—illustrating Philippine Island landshells—has appeared. The further portion of DALL's (121) 'Tertiary Fauna of Florida' contains, as of old, a large amount of systematic detail which is of importance to students of recent molluscs; the present part deals with a portion of the Pelecypoda: here we may also note the further instalment of SACCO's (452) work on the tertiary fossils of Piedmont and Liguria. TAYLOR (521) has issued the completion of the first volume of his study of the British land and freshwater Mollusca; we trust the systematic portion will shortly appear.

Amongst the works relating to non-marine molluscs will be found a number of papers by GUDE (200, 201, 206) and PILSBRY (388, &c.) dealing with Japanese shells, as also minor writings by EHRMANN (163) and MOELLENDORFF (334) relating to the same fauna. The authors appear to have been engaged in describing collections formed by the same person with the result—as might be expected—that several species have received more than one name, and the future student of Japanese shells will have no light task before him. ANDREAE (12) and STURANY (506) have dealt with interesting collections from Central Asia. A number of forms from Indo-China have been described by BAVAY & DAUTZENBERG (31), the former (30) also pointing out a link between the faunas of North America and Asia. Several papers relating to Island faunas may be grouped together: MARTENS (305) on Sumatra; SMITH (481) on Christmas Island; DALL (124) on the Galapagos and Cocos Islands; PILSBRY (384) on the Bermudas; and SYKES (509) on the Hawaiian Islands. CORSI (105) has given a review of the fauna of Uruguay, and many brief papers on the North American fauna have appeared. Perhaps the most important of the systematic studies is that of SIMPSON (465) on the *Unionidae*, he having dealt with this exceedingly difficult family with painstaking care and skill; DROUET (157A), approaching the subject from a very different specific point of view, has recorded fifty-one species from the 'Basin of the Seine,' fortunately, however, only a few are described as new. An interesting discovery has been made by PILSBRY (399), who has described a new 'slug-like genus of dart-bearing *Helicidae*' from Mexico, under the new generic name of *Metostracon*. Several other papers have been written on slugs, notably by BABOR (20, 21), COLLINGE (98–104), and SIMROTH (467); while PFEIFFER (380) has issued a study of *Triboniophorus*.

DYBOWSKI (160, 162) has written some papers relating to the fauna of Lake Baikal, perhaps the most interesting feature being the discovery in that lake of a species of *Ancylodoris*.

Several works by BERGH (38–41), relating to marine molluscs, may be grouped together, firstly a further fascicule of the 'Campagnes Scientifiques' dealing with Nudibranchs and *Marsenia*, secondly accounts of the Opisthobranchs of the Schauinsland Expedition and of the Nudibranchs of the Ingolf Expedition, thirdly a further portion of SEMPER's well-known 'Reisen.' DAUTZENBERG (135) has written an account of the molluscs collected during the cruise of the 'Chazalie' on both sides of the Atlantic. DALL (122, 123) has dealt with the *Cardiidae* and *Tellinidae* of North America; VERRILL (536), separately, and with BUSH (537), has added to our knowledge of the fauna of the Bermudas; CORSI (105) has catalogued the molluscs of Uruguay; and IHERING (239) has given a systematic account of the South American *Mytilidae*. GATLIFF and PRITCHARD, both separately and in conjunction (180, 181, 425–430) have worked on the fauna of Victoria and

several interesting notes on Australasian shells will be found in the writings of HEDLEY (218-220). We may also note the paper of MELVILL & STANDEN (330) relating to Franz Josef Land, the fauna of Oran by PALLARY (369), and NICHOLS' (352) list of the Irish Mollusca. A synopsis of the Céopside Cephalopods has been written by PFEFFER (379), in which the new names somewhat outnumber the descriptions. *Bathysciadium* is an interesting new genus of Limpets, described by DAUTZENBERG & FISCHER (142), with a note on its anatomy by PELSENEER (377).

Turning to the more strictly anatomical works we may first note a series of papers by CARAZZI (79-82), GEORGEVITCH (184), and MAZZARELLI (320-323) dealing with the embryology of *Aplysia*; while BOTTAZZI & ENRIQUES (61) have examined the nervous system of *Aplysia* and some Cephalopods. The development of the last named and *Planorbis* has been, respectively, studied by FAUSSEK (167) and HOLMES (234). LINVILLE (280) has written on the maturation and fertilization of Gastropods, CAMUS (75, 76) on the blood of snails, and TAUBER (517) on the morphology of the Stylocephalophora. A detailed account of the anatomy of some Asiatic Helicoids has been given by WIEGMANN (559). HESSE (223) has written on the eyes of Mollusca, DREW (155-157) has dealt with the anatomy of *Yoldia* and issued some notes on locomotion in *Solenomyia* and its allies, GUIART (207) has put forward a classification of the Opisthobranchs, while the growth and development of the shell have attracted STEMPPELL (500).

The Recorders have been considering the best means of breaking up the somewhat lengthy paragraphs which now appear under the heading 'Geological,' so that students might more speedily and easily find that which they desire: tentatively the first large group of 'Tertiary' has been divided geographically by continents, and criticisms or suggestions would be welcomed.

Inasmuch as an index-volume to the 'Record' is in preparation, the present opportunity has been taken to include as many genera and sections, omitted in past years, as the Recorders are aware of, but no such names issued prior to Scudder's 'Nomenclator' have been here given. In the course of this work a few papers—now given in a supplemental list of titles—and certain systematic details were detected, which appear to have previously escaped the notice of Recorders. Students are warned that any reference to a title numbered from 576 to 588, relates to the publications of past years; where such systematic details are now given, the references have the year in which the omission occurred added in square brackets.

In conclusion the Recorders desire to repeat their protest against the practice of issuing new genera and species without any distinguishing mark, or with only an inadequate one (such as "mihi"); while authors persist in this course errors and omissions are bound to exist in nearly every volume of the 'Zoological Record.'

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—. [See also WOODWARD & ADAMS (569).]
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China and Central Asia:—Land and freshwater shells with notes, several species figured, and n. spp. of *Buliminus*, *Cathaica*, *Corbicula*, *Metodionta*, *Planorbis*, *Platypetasus*, *Plectotropis*, *Pupopsis* (n. gen.), *Satsuma* (?), *Stylomodiscus*, *Unio*, and *Valvata*; STURANY (506).

China:—The American genera *Anculotus* and *Pleurocera* occurring in China; BAVAY (30): Note on fauna; GREDLER (197): *Nodularia cylindracea*, n. sp.; SIMPSON (464): Landshells, with new names but no diagnoses; ANDREAE (12): *Anadenus dautzenbergi*, n. sp.; COLLINGE (100): Land and freshwater shells, with *Vivipara wingatei*, n. sp.; SMITH (477): New species of *Clausilia*, *Helix*, and *Plectopylis*; ANCEY, Bull. Soc. malac. France ii, pp. 127–134 [1885].

Tibet and Szechuen, borders of:—*Euhadra* (?) *pseudocampylaea*, n. sp.; ANCEY (10).

Lake Baikal:—Notes on fauna; DYBOWSKI (160): *Ancylodoris baikaleensis*, n. sp.; DYBOWSKI (162).

5. Japanese Region.

Japan:—New species of *Clausilia*, *Ganesella*, *Plectotropis*, and *Trishoplita*; EHRENNAN (163): Notes on Helicoid landshells, with list of known species, and n. spp. of *Eulota*; GUDE (200): Further notes with n. spp. of *Chloritis* and *Eulota*; GUDE (201): New species of *Arnouldia*, *Crystallus*, *Eulota*, *Ganesella*, *Kaliella*, *Microcytis*, *Plectotropis*, *Pyramidula*, and *Trishoplita*; GUDE (206): Landshells from Iki and Tsushima, with n. spp. of *Buliminus*, *Clausilia*, *Pupinella*, and *Satsuma*; MOELLENDORFF (334): New species of *Clausilia*; PILSBRY (398): New species of *Alycaeus*, *Georissa*, *Kaliella*, *Macrochlamys*, and *Vitrea*; PILSBRY (388): New species of *Clausilia*; PILSBRY (392): *Pseudodon loomisi*, n. sp.; SIMPSON (464): New species of *Buliminus*, *Cyclotus*, *Eulota*, *Ganesella*, and *Pomatopsis*; PILSBRY (412): *Eulota gudeana*, n. sp.; PILSBRY (414): New species of *Euconulus*, *Eulota*, *Kaliella*, and *Punctum*; PILSBRY (417): *Diplommatina uzenensis*, n. sp.; PILSBRY & GULICK (420).

Loo-Choo Islands:—List of known species of Helicoid land shells; GUDE (200): Addenda with n. spp. of *Arnouldia*, *Eulota*, *Ganesella*, and *Macrochlamys*; GUDE (201).

Bonin Is.:—Fauna; ANCEY (7): Note on *Eulota mandarina*; GUDE (201).

6. Atlantidean Region.

Azores:—*Buliminus (Napaeus) simrothi*, n. sp.; KOBELT in MARTINI & CHEMNTZ (311): Landshells; MILNE-EDWARDS, Bull. Soc. malac. France ii, p. 313 [1885].

Madeira:—Supplement to catalogue of Norman collection; NORMAN (357).

Canary Islands:—Note on two land shells; GUDE (202).

b. PALÆOTROPICAL AFRICAN ZONE.

7. Central African Region.

Central Africa:—New species of *Limicolaria*; GRANDIDIER, Bull. Soc. malac. France ii, pp. 157–161 [1885].

German East Africa:—New species of *Achatina*, *Buliminus*, and *Helix* (*Phasis*); MARTENS (301): New species of *Ennea*, *Helix*, and *Macrochlamys*; MARTENS (303).

Bagamoyo:—*Unio ledoulxianus*, n. sp.; CHARMES, Bull. Soc. malac. France ii, p. 173 [1885].

Congo Free State:—New species of *Ganomidos*, *Melania*, and *Perideropsis*; DUPUIS & PUTZEYS (159).

8. West African Region.

[None.]

9. South African Region.

S. Africa:—Notes on slugs, with n. spp. of *Amalia*, *Apera*, and *Oopelta*; COLLINGE (104).

Transvaal:—*Achatina zebra*, n. sp.; MARTENS (301).

Delagoa:—Land shells; BUGNION, Bull. Soc. Vaudoise xxxv, p. 278.

10. Malagasy Region.

Madagascar:—*Clavator vayssierei*, n. sp.; ANCEY (6): *Clavator placostyloides*, n. sp.; KOBELT (266): *Acroptychia pyramidalis*, n. sp.; SYKES (513).

Mayotte:—*Pachnodus fagotianus*, n. sp.; ANCEY, Bull. Soc. malac. France ii, p. 144 [1885].

11. Afro-Arabian Region.

Sokotra:—Notes on Fauna; ANCEY, Bull. Soc. malac. France ii, p. 147 [1885].

[? Sokotra]:—*Bonnanius bonvieri*, n. gen. and sp.; JOUSSEAUME (252).

c. PALEOTROPICAL ORIENTAL ZONE.

12. Indian Region.

India:—*Nanina (Xestina) theobaldiana*, n. sp.; KOBELT in MARTINI & CHEMNITZ (311).

Ceylon:—*Acarus polei*, n. sp.; COLLETT (96).

13. Indo-Chinese Region.

Assam:—*Sesara harmeri*, n. sp.; GUDE (203): *Spiraculum assamense*, n. sp.; FULTON (178).

Annam:—New species of *Amphidromus*; MOELLENDORFF (333): New species of *Amphidromus*, *Camerella*, *Diplomatina*, *Ennea*, *Georissa*, *Hemiplecta*, *Hypselostoma*, *Kaliella*, *Lagochilus*, *Leptopoma*, *Otesia*, *Plectotropis*, and *Streptaxis*; MOELLENDORFF (335): *Unio fruhstorferi*, n. sp.; DAUTZENBERG (138).

Tonkin:—New species of *Alycaeus*, *Buliminus*, *Clausilia*, *Cremnoconcha*, *Helix*, *Lithoglyphus*, *Macrochlamys*, *Melania*, and *Stenothyra*; BAVAY & DAUTZENBERG (31): *Plectopylis francoisi*, n. sp.; FISCHER (172): *Plectopylis lepida*, n. sp.; GUDE (205).

Penang:—*Vivipara penangensis*, n. sp.; MARTENS

14. *Indo-Malay Region.*

Sumatra:—*Atopos* (*Padangia*, n. subgen.) *schildii*, n. sp.; BABOR (21): Land and freshwater shells, with n. spp. of *Alyceus*, *Amphidromus*, *Anodonta*, *Corbicula*, *Cyclophorus*, *Macrochlamys*, *Melania*, *Pupina*, and *Unio*; MARTENS (306).

Borneo:—List of eighteen species from Kina Balu; SMITH (478): *Leptopoma* (*Trocholeptopoma*) *mitchellae*, n. sp.; SMITH (474): Shells from Mount Kina Balu; HANITSCH (215).

Christmas Island:—Terrestrial fauna, with figures of all the species (*Assiminea andrewsiiana*, n. sp.); SMITH (481).

15. *Philippine Region.*

Philippine Islands:—Illustrations of land shells; HIDALGO (224).

d. AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

Celebes:—Notes on fauna; SIMROTH (471).

17. *Australian Region.*

Australia:—Notes on *Pupidae*; PILSBRY (390).

Queensland:—*Diplommatina oreadis*, n. sp.; HEDLEY (220): *Petterdiana thaanumi*, n. sp.; PILSBRY (408).

Tasmania:—Shells in Tasmanian Museum; LODDER (284).

18. *Austro-Polynesian Region.*

Mid-Pacific:—Genesis of land fauna; PILSBRY (397).

New Hebrides:—*Veronicella brunnea*, n. sp.; COLLINGE (99): *Placostylus heterostylus*, n. sp.; PILSBRY in TRYON (529): *Cyrena ingens*, n. sp.; DAUTZENBERG (137).

New Caledonia:—New species of *Bulimus* and *Helix*; EUTHYME, Bull. Soc. malac. France ii, pp. 242–257 [1885].

Loyalty Is.:—*Veronicella willeyi*, n. sp.; COLLINGE (99).

Fiji Islands:—*Veronicella gilsoni*, n. sp.; COLLINGE (102).

19. *Polynesian Region.*

Polynesia:—Notes on *Pupidae*; PILSBRY (391).

Hawaiian Islands:—Non-marine fauna, with n. spp. of *Achatinella*, *Ancylus*, *Auriculella*, *Leptachatina*, *Perdicella*, *Succinea*, and *Tornatellina*; SYKES (509).

Caroline Islands:—Non-marine Mollusca, with n. spp. of *Charopa*, *Endodonta*, *Eulota*, *Flammlina*, *Georissa*, *Opeas*, *Quadrasiella*, *Tornatellina*, and *Vertigo*; MOELLENDORFF (339).

Mariannes:—Non-marine fauna; MOELLENDORFF (339).

Pelews:—Non-marine fauna; MOELLENDORFF (339).

20. Neozealianian Region.

Norfolk I.:—Non-marine Mollusca, with n. spp. of *Fretum*, *Medyla*, *Microcytis*, *Omphalotropis*, *Paludestrina*, *Sitala*, *Trochonanina*, and *Vertigo*; SYKES (512).

Phillip I.:—Non-marine Mollusca, with *Fretum grayi*, n. sp.; SYKES (512).

e. NEANTARCTIC ZONE.

21. Patagonian Region.

Patagonia:—*Pyramidula patagonica*, sub-fossil, n. sp.; SUTER (508).

Uruguay:—Review of fauna; CORSI (106): Occurrence of *Strophocheilus globosus*; PILSBRY (389).

22. Chilian Region.

[None.]

f. NEOTROPICAL ZONE.

23. Peruvian Region.

Peru:—Notes on land shells, with n. spp. of *Bulimulus* and *Polygyratia*; PILSBRY (389): *Clausilia granulosa*, n. sp.; SYKES (513).

Galapagos:—Fauna, with n. spp. of *Bulimulus*, *Endodonta*, and *Vitrea*; DALL (124).

24. Colombian Region.

Venezuela:—New species of *Euritus* and *Nenia*; JOUSSEAUME (252).—Orinoco River: *Glabaris falsus*, n. sp.; SIMPSON (465).

Ecuador:—New species of *Nenia* and *Rhodea*; JOUSSEAUME (252): *Despana* (*Chersodespana*, n. subgen.) *cinnamomea*, n. sp.; SYKES (513): *Glandina aquatoria*, n. sp.; DA COSTA (120).

U. S. of Colombia:—*Glandina floccata*, n. sp.; DA COSTA (120): *Plecochilus dalmasi*, n. sp.; DAUTZENBERG (135): New species of *Nenia* and *Rhodea*; JOUSSEAUME (252).

25. Brazilian Region.

Brazil:—Land shells, with n. spp. of *Pupa*, *Pyramidula*, and *Streptaxis*; SUTER (508): New species of *Peadara* and *Solaropsis*; IHERING (241): *Strophocheilus pilsbryi*, n. sp.; PILSBRY in PILSBRY (389): Note on land shells, with n. spp. of *Happia*, *Helicina*, and *Strophocheilus*; PILSBRY (389): *Bulimulus dukinfieldi*, n. sp.; MELVILL (325).

Bolivia:—*Pisidium boliviense*, n. sp.; STURANY (29): *Eurytus couturesi*, n. sp.; ANCEY (8).

26. Mexican Region.

Mexico:—Land and freshwater shells, with n. spp. of *Chondropoma* and *Unio*; PILSBRY (407): *Metistracon mima*, n. gen. and sp.; PILSBRY (399): New species of *Anodonta* and *Sphaerium*; MAI

New Mexico:—*Zonitoides neomexicanus*, n. sp.; PILSBRY (404): Land shells from rejectamenta of Rivers; PILSBRY (411): Note on shells from Raton; PILSBRY (418): Mollusca from Sandia Mts. and Las Vegas; PILSBRY & COCKERELL (419).

Panama:—New species of *Glandina* and *Streptostylus*; DA COSTA (120).

Costa Rica:—*Cyclophorus underwoodi*, n. sp.; DA COSTA (120): *Bulimus inauratus*, n. sp.; FULTON (178): New species of *Eupera*, *Melampus*, and *Sphaerium*; MARTENS (309).

Cocos Is., Costa Rica:—Fauna, with n. spp. of *Guppya*, *Leptinaria*, and *Vertigo*; DALL (124).

Honduras:—*Nephronaias reticulatus*, n. sp.; SIMPSON (464).

Guatemala:—*Glandina iheringi*, n. sp.; PILSBRY (410): *Quadrula guatemalensis*, n. sp.; SIMPSON (464): New species of *Anodonta* and *Unio*; MARTENS (309).

Mosquito Coast:—Shell collecting notes; FLUCK, *Nautilus* xiv, p. 94.

27. Caribbean Region.

Cuba:—*Unio proclinatus*, n. sp.; MARTENS (309).

Bahamas:—*Cerion stevensoni*, n. sp.; DALL (130).

g. NEARCTIC ZONE.

28. American Region.

United States:—Review of *Pupidae*, with *Vertigo columbiana*, n. sp.; PILSBRY & VANATTA (421): Illustrations of unfigured *Unionidae*, with n. spp. of *Lampsilis*, *Pleurobema*, *Ptychobranchus* (n. gen.), and *Quadrula*; SIMPSON (464): Distribution of *Unionidae*; SIMPSON (466).—Great Smoky Mountains: Note on fauna; FERRISS (170): Review of fauna, with n. spp. of *Gastropoda*, *Punctum*, and *Vitrea*, and new varieties; PILSBRY (387).—Red River: Freshwater shells; FRIERSON (175).

Alabama:—*Unio hagleri*, n. sp.; FRIERSON (174).—Arkansas and Choctaw Nation: *Zonitidae*; PILSBRY (401).—Arkansas: *Lampephilis simpsoni*, n. sp.; FERRISS (169): Land shells with *Polygyra pilsbryi*, n. sp.; FERRISS (168): Notes on land and freshwater shells; PILSBRY (393).—Western Florida: Land shells; JOHNSON (250).—Florida: Occurrence of *Polygyra auriculata*; PILSBRY, *Nautilus* xiii, p. 118.—Georgia: *Unio kingii*, n. sp.; WRIGHT (571).—Illinois: Revision of *Physae*; BAKER (23).—Indiana: On the fauna; CALL (577): Detailed account of fauna; CALL (74): Notes on some shells; CALL (578).—Kentucky: Collection of land and freshwater shells; PRICE (424).—Maine: Land shells of Kennebunkport; CLAPP (88): Land and freshwater shells from; NYLANDER (358).—Michigan: *Pisidium imbecille*, n. sp.; STERKI (501).—Michigan, Illinois, Kentucky, and Iowa: *Pisidium peraltum*, n. sp.; STERKI (501).—Minnesota: Shells from Heron and Eagle Lakes; STEARNS (489).—Montana: *Pyramidula elrodi*, n. sp.; PILSBRY (413).—New Jersey: Land shells of Cape May; PILSBRY (416).—New York: Shells near Rochester; BAKER (24).—Rhode Island: Freshwater shells; BAKER (22).—North Carolina: *Philomycus secretus*, n. sp.; COCKERELL (93).—Texas: Note on cave fauna; EIGENMANN, P. Amer. Ass. xlvi, p. 229: Several land shells; FERRISS (168): *Helicodiscus eigenmanni*, n. sp.; PILSBRY (413).

Bermudas:—Land shells, with critical notes, and figures of several spp.; PILSBRY (384).

29. Californian Region.

California:—Introduced molluscs; STEARNS (495): Reprinted descriptions and notes; ORCUTT (368): *Epiphragmophora bowersi*, n. sp.; BRYANT (67): Occurrence of *Margaritana* in a water tunnel; BUTTON, *Nautilus* xiii, p. 130: *Epiphragmophora harperi*, n. sp.; BRYANT (68): Occurrence of *Vallonia pulchella*; STEARNS (494): Occurrence of *Circinaria hemphilli*; BUTTON, *Nautilus* xiv, p. 72.

Lower California:—Note on species of *Calocentrum*, with *C. eisenianum*, n. sp.; PILSBRY (394).

Lower California and neighbouring Islands:—Notes, with n. spp. of *Epiphragmophora* and *Succinea*; DALL (124).

30. Canadian Region.

Canada:—List of land shells; TAYLOR (519): Occurrence of *Gastroponta lamellidens*; WALKER (548): Occurrence of *Hemphillia glandulosa*; TAYLOR (520).

Vancouver I.:—*Vertigo columbiana*, n. sp.; PILSBRY & VANATTA (421).

Newfoundland:—Occurrence of *Helix hortensis*; CLAPP, *Nautilus* xiv, p. 72.

Puget Sound:—*Ariolimax steindachneri*, n. sp.; BABOR (21).

MARINE MOLLUSCA.

1. Arctic Province.

W. Greenland:—N. spp. of *Bathydoris*, *Doridoxa* (n. gen.), and *Goniolepis*; BERGH (41).

S.W. of Iceland:—N. spp. of *Atthila* (n. gen.) and *Candiella*; BERGH (41).

Franz-Josef Land:—Marine shells with *Buccinum brucei*, n. sp.; MELVILL & STANDEN (330).

Kolguev:—Marine shells; MELVILL & STANDEN (330).

2. Boreal Province.

Norway:—Littoral shells from Lyngor; STRAND (504).

3. Celtic Province.

Study of fauna continued; KOEBELT (269).

British Islands:—Notes on Gastropods; MARSHALL (297).—South of England: Abundance of *Octopus*; GARSTANG (179).—*Acmaea testudinalis* on N.E. English coast; ROEBUCK, Naturalist 1900, p. 299.—Salcombe Estuary: Fauna; ALLEN & TODD (5).—Falmouth: Notes on fauna; VALLENTIN (531).—Hampshire & I. of Wight: Fauna; WOODWARD & ADAMS (569).—Yorkshire: *Acmaea testudinalis*; BRAIM, Naturalist 1900, p. 367.—Ireland: Fauna of; NICHOLS (352).—Bantry Bay: *Odoxostomia verticalis*, n. sp.; MARSHALL (297).—Valencia Harbour: Pelagic fauna; BROWNE (64): Opisthobranchiate Molluscs; BEAUMONT (33).—Scotland: Marine Mollusca; KNIGHT (265).—West Lothian: *Eledone cirrhosa*; GODFREY, Ann. Scott. Nat. Hist. 1900, p. 186.—Aberdeen: *Murex simpsoni*, n. sp.; MARSHALL (296).—Firth of Forth: Occurrence of *rondeletii*; GODFREY, Ann. Scott. Nat. Hist. 1900 ".

4. *Lusitanian Province.*

Study of fauna continued ; KOBELT (269).

France :—Comparison of Opisthobranchs from Mediterranean and Atlantic coasts ; VAYSSIÈRE (534) : Species of *Fismurella* ; LOCARD (282) : Marine mollusca occurring at Cancale ; MARTEL (300).—Gironde : Note on *Ostrea angulata* ; ROCHEBRUNE (445).—Saint-Malo : List of marine mollusca ; DAUTZENBERG & DUROUCHOUX (140).

Gulf of Gascony :—*Melampus biscayensis*, n. sp. ; FISCHER (171).

Portugal :—Fauna continued ; NOBRÉ (354).

Mediterranean :—*Gadinia requieni*, n. sp. ; LOCARD (281) : Notes on shells, with *Cyclope westerlundi*, n. sp., Greece ; BRUSINA (65).

Corsica :—Gastropod fauna, with n. spp. of *Clathurella*, *Mangelia*, and *Nassa* ; LOCARD & CAZIOT (283).

Adriatic :—Notes on Pelecypods ; CHIAMENTI (85).

Oran :—Fauna, with many new varieties, and n. spp. of *Alexia*, *Columbella*, *Eulima*, and *Nassa* ; PALLARY (369).

Azores :—*Bathysciadium conicum*, n. g. and n. sp. ; DAUTZENBERG & FISCHER (142) : New species of *Discodoris* and *Marsenia* ; BERGH (38).

Azores and Madeira, between :—*Micrella dubia*, n. gen. and sp. ; BERGH (38).

5. *Aralo-Caspian Province.*

Caspian Sea :—Shells from ; LÖNNBERG (290).

6. *West African Province.*

Cape Verd Is. :—*Lucapinella versluysi* and *Modulus guernei*, n. spp. ; DAUTZENBERG (135).

Togo :—Occurrence of *Teredo fimbriata* ; MARTENS (304).

Goree :—*Turbonilla maltzani*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311).

7. *South African Province.*

South Africa :—Occurrence of *Cryptoplax* ; SYKES (513) : *Paraplysia lowii*, n. sp. ; GILCHRIST (188) : *Pleurobranchaea capensis*, n. sp. ; VAYSSIÈRE (533) : New species of *Bullia*, *Cassis*, *Dolium*, and *Turbo* ; EUTHYME, Bull. Soc. malac. France ii, pp. 237–252 [1885].

Pondoland and The Kowie :—Notes on shells with n. spp. of *Amphiperas*, *Ancilla*, *Columbella*, *Euthria*, *Gibbula*, *Mitra*, *Nassa*, *Niso*, *Terebra*, *Tritonidea*, *Trophon* (?), *Turbonilla*, and *Turritella* ; SOWERBY (485).

Delagoa :—Marine shells ; BUGNION, Bull. Soc. Vaudoise xxxv, p. 278.

8. *Indo-Pacific Province.*

Andaman Islands :—*Cassis booleyi*, n. sp. ; SOWERBY (487).

Christmas Island :—List of marine shells ; SMITH (480).

China :—New species of *Odostomia* and *Turbonilla* ; CLESSIN in MARTINI & CHEMNITZ (311).

Lake Baikal :—Notes on fauna ; DYBOWSKI (160) : *Ancylodoris baicalensis*, n. sp. ; DYBOWSKI (162).

Philippine Islands :—*Odostomia manilensis*, n. sp. ; CLESSIN in MARTINI & CHEMNITZ (311).—Cebu : New species of *Cyclostrema*, *Glyphostoma*, *Leptoptyra*, *Marginella*, *Mitra*, *Mucronalia*, *Natica*, *Ocinebra*, *Ringicula*, and *Vitrinella* ; SOWERBY (486).

Sumatra :—*Parthenia benguelensis*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Amboina :—*Oscaniopsis amboinensis*, n. sp.; VAYSSIÈRE (533): *Turbanilla subulata*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Timor :—*Turbanilla martensi*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Hawaiian Islands :—*Cypraea kauilani*, n. sp.; KENYON (261).

Laysan Island :—*Samla annuligera*, n. gen. and n. sp.; BERGH (40).

Pacific Ocean :—*Chelidonura plebeja*, n. sp.; BERGH (39).

Ralum I. :—*Phyllaplysia pacifica*, n. sp.; BERGH (39).

Ralik Islands :—*Turbanilla fintchi*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Fiji :—Occurrence of *Scala revoluta*; HEDLEY (219).

New Caledonia :—New species of *Cerithiopsis* and *Natica*; EUTHYME, Bull. Soc. malac. France ii, pp. 239, 255 [1885].

Torres Straits :—New species of *Couthouya*, *Scalenostoma*, and *Teinostoma*; HEDLEY (220).

Queensland :—New species of *Leucotina*, *Liotia*, and *Scalenostoma*; HEDLEY (220).

9. Australo-Zealandic Province.

South Australia :—New species of *Ischnochiton* and *Callochiton*; ASHBY (18): *Chiton oruktus*, n. sp.; MAUGHAN (315): New species of *Eulima*, *Marginella*, *Odontostomia*, and *Scalaria*; TATE & MAY (516).

Victoria :—Notes on some species of *Murex*; KENYON (260): New species of *Erato*, *Marginella*, *Natica*, *Odostomia*, *Stylifer*, and *Turbanilla*; PRITCHARD & GATLIFF (430): New species of *Cithara*, *Clathurella*, *Drillia*, *Liotia*, *Mangilia*, and *Mitromorpha*; PRITCHARD & GATLIFF (427): Review of fauna continued, with critical notes; PRITCHARD & GATLIFF (428, 429): Note on marine mollusca; GATLIFF (180): New species of *Eulima*, *Odontostomia*, *Rissoia*, and *Scalaria*; TATE & MAY (516).

N. S. Wales :—Notes on fauna, with n. spp. of *Fossarus*, *Menon* (n. gen.), *Puncturella*, and *Seila*; HEDLEY (220): Occurrence of *Turricula scalariformis*; HEDLEY (218).—Off Sydney (410 fthms.): New species of *Turritella*; DONALD (151).—Port Jackson: New variety of *Turritella quadrata*; DONALD (151).

Bass Strait :—New species of *Turritella*; DONALD (151).

Tasmania :—New species of *Cadulus*, *Cantharus*, *Carditella*, *Cyamium*, *Cyclostrema*, *Donovania*, *Eulima*, *Lampusia*, *Marginella*, *Odontostomia*, *Rissoia*, *Rissoopsis*, *Scalaria*, *Syrnola*, *Thylucodes*, and *Turritella*; TATE & MAY (516): Shells in Tasmanian Museum; LODDER (284).

New Zealand :—Two new species of *Aolidiella*; BERGH (40).

10. Juponic Province.

Japan :—New species of *Euthria*, *Siphonalia*, and *Voluta*; SOWERBY (488): New species of *Odostomia* and *Turbanilla*; CLESSIN in MARTINI & CHEMNITZ (311).

11. Aleutian Province.

Canada :—Fauna of Pacific Coast; TAYLOR (519).

Vancouver Island :—*Phyllaplysia taylori*, n. sp.; DALI. (131): *Archidoris nyctea*, n. sp.; BERGH (40).

Sitka :—*Odostomia sitkaensis*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311).

Bering Strait :—*Macoma krausei*, n. sp.; DALL (122).
 Alaska :—New species of *Macoma*; DALL (122).

12. *Californian Province.*

Western North America :—Review of *Tellinidae*; DALL (122); Review of *Cardiidae*; DALL (123); Notes on species of *Saxidomus*; STEARNS (493).

California :—Introduced molluscs; STEARNS (495); Varieties of *Haliotis*; STEARNS (490); Reprinted descriptions and notes; ORCUTT (366); *Capulus californicus*, n. sp.; DALL (125); Occurrence of *Myoforceps aristatus* near San Diego; BUTTON, *Nautilus* xiii, p. 131; *Murex petri*, n. sp.; DALL (128); *Pleurobranchus californicus*, n. sp.; DALL (132).—San Diego Bay: Note on fauna; KELSEY (257).

California and Lower California :—New species of *Tellina* and *Macoma*; DALL (122).

13. *Panamic Province.*

Mexico :—*Tellina macneilli*, n. sp.; DALL (122).

Panama :—*Odostomia panamensis*, n. sp.; CLESSIN in MARTINI & CHEMNITZ (311); New species of *Macoma* and *Tellina*; DALL (122).

Colombia :—Marine shells; BAVARIA, PRINCESS OF (29).

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- Chiroteuthopsis*, n. gen. for *C. grimaldii*, Joubin; PFEFFER, Jahrb. Hamburg. Anst. xvii, Beiheft ii, p. 187.
- Compoeteuthis*, n. gen. for *C. lönnerbergi*, n. sp. [not described]; PFEFFER, t. c. p. 167.
- Hensoniteuthis*, n. gen. for *H. joubini*, n. sp. [not described]; PFEFFER, t. c. p. 193.
- Heteroteuthis*, on the genus, with anatomy; STEENSTRUP (497).
- Histiopsis*, Hoyle, renamed *Hoylia*, q.v.
- Hoylia*, n. n. for *Histiopsis*, Hoyle, nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 44.
- †*Kerunia*, n. g. for *K. cornuta*, n. sp. from the Eocene of Egypt; MAYER-EYMAR, Eclog. geol. Helvet. vi, p. 120.
- Lycoteuthis*, n. gen. for *L. jattai*, n. sp. [not described]; PFEFFER, Jahrb. Hamburg. Anst. xvii, Beiheft ii, p. 161.
- Meleagroteuthis*, n. gen. for *M. hoylei*, n. sp. [not described]; PFEFFER, t. c. p. 170.
- Micabralia*, n. gen. for *M. lineata*, Goodrich; PFEFFER, t. c. p. 167.
- Rossia*, on the genus; STEENSTRUP (497).
- Sepiola*, on the genus; STEENSTRUP (497).
- Spirula*, live specimen figured; CHUN (87), p. 518.
- Stigmatoeuthis*, n. gen. for *S. hoylei*, Goodrich; PFEFFER, Jahrb. Hamburg. Anst. xvii, Beiheft ii, p. 170.
- Symplectoteuthis*, n. gen. for *S. ovalaniensis*, Lesson; PFEFFER, t. c. p. 180.
- Taoniidium*, n. gen. for *T. suhmi*, Hoyle; PFEFFER, t. c. p. 192.
- Teleonychoteuthis*, n. gen. for *T. krohni*, Verany; PFEFFER, t. c. p. 158.
- Tetronychoteuthis*, n. gen. for *T. dussumieri*, D'Orb.; PFEFFER, t. c. p. 161.
- Thelidioteuthis*, n. gen. for *T. polyonyx*, Troschel; PFEFFER, t. c. p. 167.

AMMONEA.

- †*Acanthinites*, n. subg. of *Cyrtopleurites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 517 [1893].
- †*Anasibirites*, n. subg. of *Sibirites*, Mojs. from the Trias; MOJSISOVICS, Denk. Ak. Wien lxiii, p. 615 [1897].
- †*Anasirites*, n. subg. of *Sirenetes*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 725 [1893].
- †*Anatibetites*, from the Upper Trias of the Himalaya; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 349 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 635 [1897].
- †*Anatomites*, n. subg. of *Juvavites*, Mojs.; MOJSISOVICS, Abh. geol. Reichsanst. vi, 2, p. 74 [1893].
- †*Anatropites*, n. subg. of *Tropites*, Mojs.; MOJSISOVICS, t. c. p. 184 [1893].
- †*Anolites*, n. subg. of *Trachyceras*, Laube; MOJSISOVICS, t. c. p. 617 [1893].
- †*Arthaberites*, n. g., for *A. alexandriæ*, n. sp., from the Muschelkalk near Hallstatt; DIENER, Beitr. Pal. Oester.-Ung. xiii, p. 17.
- †*Bambanagites*, n. gen. from the Trias of the Himalaya; MOJSISOVICS, Verh. geol. Reichsanst. 1896, p. 350 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 660 [1897].

- +*Barrandeites*, n. g., type *Ammonites turbina*, Dittm.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 153 [1893].
- +*Belooceras*, n. g. for *Goniatites multilobatus*, Beyr.; HYATT, P. Boston Soc. xxii, p. 333 [1884].
- +*Brancoceras*, n. g., type *Goniatites ixion*, Hall; HYATT, t. c. p. 325 [1884].
- +*Buchites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Celæceras*, n. g., for *Goniatites præmaturus*, Barrande; HYATT, P. Boston Soc. xxii, p. 312 [1884].
- +*Clionites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 451 [1893].
- +*Cryptoclymenia*, n. g., type *Clym. beaumonti*, Münst.; HYATT, P. Boston Soc. xxii, p. 314 [1884].
- +*Cycloceltites*, n. subg. of *Celtites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 347 [1893].
- +*Danubites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, t. c. p. 398 [1893].
- +*Daphnites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, t. c. p. 452 [1893].
- +*Dimeroceras*, n. g., type *Goniatites mamillifer*, Sandb.; HYATT, P. Boston Soc. xxii, p. 330 [1884].
- +*Dimorphites*, n. subg. of *Juvavites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 74 [1893].
- +*Dimorphoceras*, n. g., for *Goniatites gilbertsoni*, Phill., and *looneyi*, Phill.; HYATT, P. Boston Soc. xxii, p. 331 [1884].
- +*Dionites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 453 [1893].
- +*Diplosirenites*, n. subg. of *Sirenites*, Mojs.; Mojsisovics, t. c. p. 725 [1893].
- +*Dittmarites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, t. c. p. 451 [1893].
- +*Drepanites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, t. c. p. 453 [1893].
- +*Ectoceras*, n. g. for *Ammonites pseudoaeratus*, F. v. Hauer and E. hochstetter, n. sp.; Mojsisovics, t. c. p. 613 [1893].
- +*Eremites*, n. g., type *E. orientalis*, Mojs.; Mojsisovics, t. c. p. 704 [1893].
- +*Gastrioceras*, n. g. for *Goniatites listeri*, Phillips, and others; HYATT, P. Boston Soc. xxii, p. 327 [1884].
- +*Gephyroceras*, n. g., type *Goniatites sinuosus*, Hall; HYATT, t. c. p. 317 [1884].
- +*Glyphidites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Griesbachites*, n. subg. of *Juvavites*, Mojs. from the Trias; Mojsisovics, Verh. geol. Reichsanst. 1896, p. 347 [1896]: Denk. Ak. Wien lxiii, p. 603 [1897].
- +*Guembelites*, for *G. jandianus*, n. sp., from the Upper Trias of the Himalaya; Mojsisovics, t. c. p. 349 [1896, nom. nud.]: as n. subg. of *Heracletes*; Denk. Ak. Wien lxiii, p. 634 [1897].
- +*Haidingerites*, n. g. for *Ammonites acutinodis*, Hauer; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 393 [1893].
- +*Hauerites*, n. subg. of *Cyrtopleurites*, Mojs.; Mojsisovics, t. c. p. 517 [1893].
- +*Haugiceras*, n. n. for *Prionoceras*, Hyatt, nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 43.
- +*Helictites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- +*Heminautilinus*, n. g., type *Goniatites hybridus*, Münster; HYATT, P. Boston Soc. xxii, p. 310 [1884].
- +*Homerites*, n. subg. of *Halorites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 13 [1893].
- +*Homoceras*, n. g., type *Goniatites calyx*, Phillips; HYATT, P. Boston Soc. xxii, p. 330 [1884].

- †*Jovites*, n. subg. of *Halorites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 13 [1893].
- †*Kneniceras*, n. g., type *Ammonites syriacus*; BÖHM, Zeitschr. Deutsch. geol. Ges. I, p. 200 [1898].
- †*Mæneceras*, n. g., type *Goniatites acutolateralis*, Sandb.; HYATT, P. Boston Soc. xxii, p. 321 [1884].
- †*Manitoceras*, n. g., type *Goniatites simulator*, Hall; HYATT, t. c. p. 318 [1884].
- †*Metasibrites*, n. subg. of *Sibirites*, Mojs. from the Trias; Mojsisovics, Denk. Ak. Wien lxiii, p. 616 [1897].
- †*Metatirolites*, n. subg. of *Tirolites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 588 [1893].
- †*Microtropites*, n. subg. of *Tropites*, Mojs.; Mojsisovics, t. c. p. 184 [1893].
- †*Militites*, n. g. for *M. schroerti*, n. sp. and others; Mojsisovics, t. c. p. 334 [1893].
- †*Minoferas*, n. g., type *Goniatites compressus*, Beyrich; HYATT, P. Boston Soc. xxii, p. 309 [1884].
- †*Münsterites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 451 [1893].
- †*Munsteroceras*, n. g., type *Goniatites oveni* var. *parallelus*, Hall; HYATT, P. Boston Soc. xxii, p. 326 [1884].
- †*Nomismoceras*, n. g. for *Goniatites spirorbis*, Phill., *rotiformis*, Phill., and others; HYATT, t. c. p. 330 [1884].
- †*Paracladiscites*, n. g. from the Upper Trias of India; Mojsisovics, Verh. geol. Reichsanst. 1896, p. 347 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 657 [1897].
- †*Paracochloceras*, n. subg. of *Cochloceras*, Hauer; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 575 [1893].
- †*Parajuvavrites*, n. gen. from the Trias; Mojsisovics, Verh. geol. Reichsanst. 1896, pp. 348 & 349 [1896, nom. nud.]: Denk. Ak. Wien lxiii, p. 590 [1897].
- †*Paralegoceras*, n. g., type *Goniatites iowensis*, M. & W.; HYATT, P. Boston Soc. xxii, p. 327 [1884].
- †*Paracestes*, n. subg. of *Arcestes* Suess; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 785 [1893].
- †*Parathubites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, t. c. p. 397 [1893].
- †*Paratibetites*, from the Upper Trias of the Himalaya; Mojsisovics, Verh. geol. Reichsanst. 1896, p. 349 [1896, nom. nud.]: as n. subg. of *Tibetites*, Mojs.; Mojsisovics, Denk. Ak. Wien lxiii, p. 635 [1897].
- †*Paratropites*, n. subg. of *Tropites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 184 [1893].
- †*Parodiceras*, n. g., type *Goniatites discoideus* Hall; HYATT, P. Boston Soc. xxii, p. 319 [1884].
- †*Paulotropites*, n. subg. of *Tropites*, Moja.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 184 [1893].
- †*Peripleurites*, n. subg. of *Choristoceras*, Hauer; Mojsisovics, t. c. p. 546 [1893].
- †*Pharciceras*, n. g. for *Goniatites tridens*, Sandb., *G. clavilobus*, Sandb., and others; HYATT, P. Boston Soc. xxii, p. 336 [1884].
- †*Phormedites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- †*Platyclymenia*, n. g. for *P. annulata*, *spinosa*, and *binodosa*, Münst.; HYATT, P. Boston Soc. xxii, p. 314 [1884].
- †*Popanoceras*, n. g. for *Goniatites kingianus*, *G. koninckianus*, and others; HYATT, t. c. p. 338 [1884].
- †*Prionoceras*, n. g., type *Goniatites divisus*, Münster; HYATT, t. c. p. 328 [1884]: Renamed *Haugiceras*, q.v.

- †*Proarcestea*, n. subg. of *Arcestea*, Suess; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 785 [1893].
- †*Protrachyceras*, n. subg. of *Trachyceras*, Laube; Mojsisovics, t. c. p. 617 [1893].
- †*Pseilocladiscites* [n. g. ?] from the Trias of Bosnia; Mojsisovics, Denk. Ak. Wien lxiii, p. 658 [1897].
- †*Ptycharcestea*, n. subg. of *Arcestea*, Suess; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 786 [1893].
- †*Sandbergeoceras*, n. g. for *Goniatites tuberculostriatus*, Sandb. and *G. chemungensis*, Hall; HYATT, P. Boston Soc. xxii, p. 333 [1884].
- †*Sandingites*, n. g. for *Ammonites oribasius*, Dittmar and others; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 706 [1893].
- †*Schistoceras*, n. g. for an undescribed species; HYATT, P. Boston Soc. xxii, p. 336 [1884].
- †*Sibyllites*, n. g. for *S. tenuispinatus*, n. sp. and others; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 314 [1893].
- †*Sirenetes*, n. g. from the Trias; Mojsisovics, t. c. p. 725 [1893].
- †*Sonninia*, aptychus of; NICKLÈS, Bull. Soc. Nancy xvi, p. 125.
- †*Sporadoceras*, n. g. type *Goniatites bidens*, Sandb.; HYATT, P. Boston Soc. xxii, p. 321 [1884].
- †*Steinmannites*, n. subg. of *Arpadites*, Mojs.; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 452 [1893].
- †*Styrites*, n. g. for *S. tropitiformis*, n. sp. and others; Mojsisovics, t. c. p. 264 [1893].
- †*Thetidites* from the Trias; Mojsisovics, Verh. geol. Reichsanst. 1896, p. 349 [1896, nom. nud.]: As n. subg. of *Sibirites*, Mojs.; Denk. Ak. Wien lxiii, p. 616 [1897].
- †*Thisbites*, n. subg. of *Ceratites*, de Haan; Mojsisovics, Abh. geol. Reichsanst. vi, 2, p. 397 [1893].
- †*Tibetites*, n. subg. of *Cyrtopleurites*, Mojs.; Mojsisovics, t. c. p. 516 [1893].
- †*Tornoceras*, n. g. type *Goniatites unangularis*, Hall; HYATT, P. Boston Soc. xxii, p. 320 [1884].
- †*Triainoceras*, n. g. for *Goniatites costatus*, d'Arch. and de Vern.; HYATT, t. c. p. 337 [1884].

TETRABRANCHIATA.

- †*Acleistoceras*, n. g., type *Apioceras olla*, Saem.; HYATT, P. Boston Soc. xxii, p. 277 [1884].
- †*Apoceras*, n. g. for *Gyroceras gibbosum*, de Koninck; HYATT, t. c. p. 296 [1884].
- †*Alpheiceras*, n. n. for *Hyatticeras* Cossmann [q.v.] nec *Hyattoceras*, Gemm.; COSSMANN, Rev. paleozool. iv, p. 144.
- †*Anomaloceras*, n. g. for *Nautilus anomalus*, Barrande; HYATT, t. c. p. 283 [1884]: Renamed *Hyatticeras*, q.v.
- †*Aphelaeceras*, n. g. for *Nautilus difficilis*, de Koninck, and *Discites disciformis*, M. & W.; HYATT, P. Boston Soc. xxii, p. 293.
- †*Apsidoceras*, n. g., type *Gyroceras magnificum*, Billings; HYATT, t. c. p. 289 [1884].
- †*Barrandeoceras*, n. g., type *Nautilus natator*, Billings; HYATT, t. c. p. 299 [1884].
- †*Billingsites*, n. g., type *Ascoceras canadense*, Billings; HYATT, t. c. p. 278 [1884].
- †*Cenoceras*, n. g., type *Nautilus intermedius*, Sowerby; HYATT, t. c. p. 300 [1884].

- +*Centroceras*, n. g., type *Goniatites marcellensis*, Vanuxem; HYATT, t. c. p. 283 [1884].
- +*Conradiceras*, n. n. for *Solenoceras*, Hyatt nec Conrad; COSSMANN, Rev. paleozool. iv, p. 43.
- +*Cranoceras*, n. g., type *Cyrtoceras depressum*, Goldf.; HYATT, P. Boston Soc. xxii, p. 281 [1884].
- +*Cymatoceras*, n. g., type *Nautilus pseudoelegans* d'Orb.; HYATT, t. c. p. 301 [1884].
- +*Dawsonoceras*, n. g., type *Orthoceras annulatum*; HYATT, t. c. p. 276 [1884].
- +*Deiroceras*, n. subg. of *Actinoceras*, type *Orthoceras python*, Billings; HYATT, t. c. p. 273 [1884].
- +*Diadiptoceras*, n. g., type *Dia. quadratum*, Hall [nom. nud.]; HYATT, t. c. p. 268 [1884].
- +*Discitoceras*, nom. nov. for *Discites* M'Coy, type *D. costellatus*, M'Coy; HYATT, t. c. p. 292 [1884].
- +*Edaphoceras*, n. g., type *Temnocheilus niotensis*, M. & W.; HYATT, t. c. p. 288 [1884].
- +*Endimatooceras*, n. g., type *Enclim. ulrichi*, White; HYATT, t. c. p. 270 [1884].
- +*Ephippioceras*, n. g., type *Nautilus ferratus*, Owen; HYATT, t. c. p. 290 [1884].
- +*Eremoceras*, n. g., type *Cyrtoceras syphax*, Billings; HYATT, t. c. p. 282 [1884].
- +*Geisonoceras*, n. g., type *Orthoceras rivale*, Barrande; HYATT, t. c. p. 275 [1884].
- +*Grypoceras*, n. g., type *Nautilus mesodiscus*, v. Hauer; HYATT, t. c. p. 269 [1884].
- +*Halluceras*, n. g., type *Gyroceras undulatum*, Hall; HYATT, t. c. p. 284 [1884].
- +*Hexameroceras*, n. g., type *Phragmoceras panderi*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Hyaticeras*, n. n. for *Anomaloceras*, Hyatt, nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 43 [Renamed *Alpheiceras*, q.v.].
- +*Kionoceras*, n. g., type *Orthoceras doricum*, Barrande; HYATT, P. Boston Soc. xxii, p. 275 [1884].
- +*Koninckioceras*, n. g., type *Nautilus ingens*, de Koninck; HYATT, t. c. p. 295 [1884].
- +*Kophinoceras*, n. g., type *Cyrtoceras ornatum*, d'Arch. & de Vern.; HYATT, t. c. p. 285 [1884].
- +*Litoceras*, n. g., type *Nautilus versutus*, Billings; HYATT, t. c. p. 268 [1884].
- +*Maelonoceras*, n. g., type *Phragmoceras præmaturum*, Billings; HYATT, t. c. p. 280 [1884].
- +*Mesochasmoceras*, n. g., type *Nautilus latidorsatus*, M'Coy; FOORD (173), p. 72.
- +*Metacoceras*, n. g., type *Nautilus sangamonensis*, M. & W.; HYATT, P. Boston Soc. xxii, p. 268 [1884].
- +*Mojavaroceras*, n. g., type *Temnocheilus neumayeri*, Moja.; HYATT, t. c. p. 269 [1884].
- +*Naedyceras*, n. g., type *Trochoceras eugenium*, Hall; HYATT, t. c. p. 281 [1884].
- Nautilus pompilius*, arterial circulation of; GRIFFIN, Johns Hopkins Univ. Circ. xix, p. 53.
- +*Nephriticeras*, n. g., type *Nautilus buccinum*, Hall; HYATT, P. Boston Soc. xxii, p. 300 [1884].
- +*Oonoceras*, n. g. for *Cyrtoceras acinacis*, Barrande, and others; HYATT, t. c. p. 280 [1884].

- +*Pentameroceras*, n. g., type *Gomphoceras mirum*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Phacoceras*, n. g., type *Nautilus oxyostomus*, de Koninck; HYATT, t. c. p. 293 [1884].
- +*Phloioceras*, n. g., type *Nautilus gemmatus*, Mojs.; HYATT, t. c. p. 286 [1884].
- +*Placenticeras*, phylogeny and development; SMITH (482).
- +*Plectoceras*, n. g., type *Nautilus jason*, Billings; HYATT, P. Boston Soc. xxii, p. 268 [1884].
- +*Pselioceras*, n. g., type *Nautilus ophioneus*, Waagen; HYATT, t. c. p. 299 [1884].
- +*Ptyosoceras*, n. g., type *Cyrtoceras alienum*, Barrande; HYATT, t. c. p. 282 [1884].
- +*Rizoceras*, n. g., type *Orthoceras indocile*, Barrande; HYATT, t. c. p. 276 [1884].
- +*Sactioceras*, n. g., type *Orthoceras richteri*, Barrande; HYATT, t. c. p. 274 [1884].
- +*Septameroceras*, n. g., type *Gomphoceras inflatum*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Solenoceras*, n. g., type *Nautilus canaliculatus*, Owen; HYATT, t. c. p. 286 [1884]; Renamed *Conradiceras*, q.v.
- +*Sphyrapoceras*, n. g., type *Trochoceras dio*, Hall; HYATT, P. Boston Soc. xxii, p. 298 [1884].
- +*Spyroceras*, n. g., type *Orthoceras crotalum*, Hall; HYATT, t. c. p. 276 [1884].
- +*Stroboceras*, n. g., type *Gyroceras hartii*, Dawson; HYATT, t. c. p. 291 [1884].
- +*Strophiceras*, n. g. for *Gyroceras binodosum*, Sandb.; HYATT, t. c. p. 286 [1884].
- +*Tainoceras*, n. g., type *Nautilus quadrangulus*, McChesney; HYATT, t. c. p. 269 [1884].
- +*Tetrameroceras*, n. g., type *Phragmoceras bicinctum*, Barrande; HYATT, t. c. p. 277 [1884].
- +*Titanoceras*, n. g., type *Nautilus ponderosus*, White; HYATT, t. c. p. 289 [1884].
- +*Triboloceras*, n. g., type *Gyroceras serratum*, de Koninck; HYATT, t. c. p. 294 [1884].
- +*Trimeroceras*, n. g., type *Gomphoceras staurostoma*, Barrande; HYATT, t. c. p. 278 [1884].
- +*Tripleuroceras*, n. g., type *Orthoceras archiaci*, Barrande; HYATT, t. c. p. 289 [1884].
- +*Triplioceras*, n. g. for *Nautilus insperatus*, Barrande; HYATT, t. c. p. 285 [1884].
- +*Tripteroberas*, n. g., type *Orthoceras hastatum*, Billings; HYATT, t. c. p. 287 [1884].
- +*Uranoceras*, n. g., type *Cyrtoceras uranum*, Barrande; HYATT, t. c. p. 299 [1884].
- +*Vaginoceras*, n. g., type *Orthoceras multitubulatum*, Hall; HYATT, t. c. p. 266 [1884].
- +*Zitteloceras*, n. g., type *Cyrtoceras lamellosum*, Hall; HYATT, t. c. p. 284 [1884].

II. GASTROPODA.

New works on the distribution of Gastropoda; SIMROTH (468).

New works on the morphology and biology of Gastropoda; SIMROTH (469).

PULMONATA.

STYLOMMATOPHORA.

Stylommatophora, morphology of; TÄUBER (517).

TESTACELLIDÆ and SELENITIDÆ.

Apera burnupi, figd.; COLLINGE, Ann. S. African Mus. ii, p. 4.

Apera natalensis, S. Africa; COLLINGE, Ann. S. African Mus. ii, p. 3, fig.: n. sp.

Ennea cruciata, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900, p. 179: *E. (Microstrophia) irregularis*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 119 : n. spp.

Glandina iheringi, Guatemala; PILSBRY, Nautilus xiv, p. 4: *G. chiriquensis*, Panama, *floccata*, U.S. of Colombia, p. 66, *equatoria*, Ecuador, p. 67; DA COSTA, P. Malac. Soc. London iv, figg. : n. spp.

Happia iheringi, Brazil; PILSBRY, P. Ac. Philad. 1900, p. 385, fig. : n. sp. *Paryphanta*, see reference inserted at p. 63, last year: *P. lignaria*, note on with figure; HUTTON, Tr. N. Zealand Inst. xxxii, p. 22.

Streptaxis tumescens, p. 330, *interruptus*, p. 331, Brazil; SUTER, Rev. Mus. Paulista iv, figg.: *S. (Discartemon) paradiscus*, p. 117, *pachyglottis*, *diplobon*, p. 118, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900 : n. spp.

Streptostylus flavescentis, Panama; DA COSTA, P. Malac. Soc. London iv, p. 66, fig. : n. sp.

LIMACIDÆ, ZONITIDÆ, and PHILOMYCIDÆ.

Monographs of *Zonites* and *Nanina*; KOEBELT in MARTINI & CHEMNITZ (311).

Agriolimax corsicus, Corsica; SIMROTH, Nachrbl. Deutsch. malak. Ges. 1900, p. 102: n. sp.

Amalia dalmatina, Dalmatia, p. 106, *montenegrina*, Montenegro, p. 107; SIMROTH, t. c.: *A. posonbyi*, S. Africa; COLLINGE, Ann. S. African Mus. ii, p. 2, fig. : n. spp.

Arnouldia nahaensis, Loo-Choo Is.; GUDE, P. Malac. Soc. London iv, p. 75, fig.: *A. ceratodes*, p. 398, *nanodes*, p. 399, Japan; GUDE, Ann. Nat. Hist. vi : n. spp.

†*Chancelia*, n. gen. for *C. letourneuxi*, n. sp., post-tertiary, Algeria; HAGEN-MÜLLER, Bull. Soc. malac. France ii, p. 311 [1885].

Crystallus sulcatus, *velatus*, Japan; GUDE, Ann. Nat. Hist. vi, p. 399 : n. spp.

†*Delenielesia*, n. gen. for five n. spp. from post-tertiary, Algeria; HAGEN-MÜLLER, Bull. Soc. malac. France ii, p. 305 [1885].

Euconulus, note on genus, of which *Conulus*, Fitz., and *Arnouldia*, Brtg., are synonyms; PILSBRY, Nautilus xiv, p. 81.

Euconulus reinhardtii, Japan; PILSBRY, t. c. p. 81 : n. sp.

Eurypus, Semper nec Kirby, renamed *Fretum*, q.v.

†*Faudelia*, n. gen. for *F. letourneuxi*, n. sp., post-tertiary, Algeria; HAGEN-MÜLLER, Bull. Soc. malac. France ii, p. 309 [1885].

Fretum, n. n. for *Eurypus*, Semper nec Kirby; SYKES, P. Malac. Soc. London iv, p. 140.

Fretum suteri, Norfolk I., p. 140, *grayi*, Norfolk and Phillip Is., n.¹⁴ SYKES, t. c. figg. : n. spp.

- Gaeotis douvillei*, note on ; COLLINGE, J. Malac. vii, p. 179.
- Gastrodonta suppressa*, n. var. ; PILSBRY, Nautilus xiii, p. 107 : *G. intertexta*, n. var. ; PILSBRY, op. cit. xiv, p. 40.
- Gastrodonta walkeri*, Gt. Smoky Mts. ; PILSBRY, P. Ac. Philad. 1900, p. 146 : n. sp.
- Godwinia*, n. gen. of *Zonitidae* for *Vitrina caperata*, Gould ; SYKES (509), p. 277.
- Guppya hopkinsi*, Cocos Is. ; DALL, P. Ac. Philad. 1900, p. 97, fig. [Radula and jaw ; PILSBRY, t. c. p. 105] : n. sp.
- Hemiplecta floweri, neptunus*, notes on, with anatomy ; GODWIN-AUSTEN, P. Malac. Soc. London iv, pp. 31-36.
- Hemiplecta platyteria*, Annam ; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 121 : n. sp.
- Hyalinia*, integument of ; ANDRÉ, Rev. Suisse Zool. viii, p. 425.
- Hyalinia baldwini*, Hawaiian Islands ; ANCEY, Bull. Soc. malac. France vi, p. 192 [1889] : n. sp.
- Kaliella difficilis*, Annam ; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 120 : *K. multivolvis*, Japan ; PILSBRY, P. Ac. Philad. 1900, p. 383 : *K. symmetrica*, p. 80, *fraterna*, p. 81, Japan ; PILSBRY, Nautilus xiv : *K. elata, crenulata, pagoduloides*, Japan ; GUDE, Ann. Nat. Hist. vi, p. 453 : n. spp.
- Krynickillus hanryanus*, France ; FLORENCE, Bull. Soc. malac. France vi, p. 330 [1889] : n. sp.
- Limacopeis*, n. gen. for *Limax caeruleans* ; SIMROTH, Abh. Senckenb. Ges. xvii, p. 3 [1890].
- Limax*, nervous system ; VERATTI (535a) : *L. agrestis*, maturation and fertilization of egg ; BYRNES (73) : *L. coccineus*, Gistel, appears to be a var. of *Arion rufus* ; COCKERELL, Nautilus xiii, p. 117.
- Limax wohlberedti*, Montenegro, p. 98, *wolterstorffi, obscurus*, Corsica, p. 99 ; SIMROTH, Nachrbl. Deutsch. malak. Ges. 1900 : *L. modestus*, France ; FLORENCE, Bull. Soc. malac. France vi, p. 333 [1889] : n. spp.
- Macrochlamys*, anatomy ; WIEGMANN (559) : *M. convallata*, n. var. ; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 8.
- Macrochlamys alluaudi*, Tonkin ; BAVAY & DAUTZENBERG, J. Conchyl. xviii, pp. 113, 444, fig. : *M. fulgens*, Loo-Choo Is. ; GUDE, P. Malac. Soc. London iv, p. 75, fig. : *M. aureofusca*, German East Africa ; MARTENS, SB. Ges. naturf. Berlin 1900, p. 178 : *M. micrograpta*, Japan ; PILSBRY, P. Ac. Philad. 1900, p. 382 : n. spp.
- Medya imitatrix*, Norfolk I. ; SYKES, P. Malac. Soc. London iv, p. 142 : n. sp.
- Microcystis baldwini*, Ancey, anatomy ; GODWIN-AUSTEN in SYKES (509), p. 281.
- Microcystis hirasei*, Japan ; GUDE, Ann. Nat. Hist. vi, p. 400 : *M. nux, castaneocincta*, Norfolk I. ; SYKES, P. Malac. Soc. London iv, p. 139, figg. : n. spp.
- Milax pacomei*, France ; FLORENCE, Bull. Soc. malac. France vi, p. 326 [1889] : n. sp.
- Nanina (Xestina) theobaldiana* (NEVILL ubi ?), Kudin ; KOBELT in MARTINI & CHEMNITZ (311) p. 980, fig. : n. sp. ?
- Omphalina levigata*, n. var. ; PILSBRY, P. Ac. Philad. 1900, p. 135.
- Otesia (Coneuplecta) annamitica*, p. 119, *globulosa*, p. 120, Annam ; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900 : n. spp.
- Philomycus*, note on Asiatic species ; COCKERELL, J. Malac. vii, p. 127.
- Philomycus secretus*, North Carolina ; COCKERELL, Nautilus xiv, p. 59 : n. sp.
- Philomenia*, n. gen. of *Zonitidae* for *Microcystis baldwini*, Ancey ; SYKES (509), p. 280.
- Sesara*, notes on genus, with figure of *S. diplodon* ; GUDE, J. Malac. vii, pp. 139-143.

- Seecara harmeri*, Assam; GÜDE, t. c. p. 139, fig.: n. sp.
Sitala macgillivrayi, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 142, fig.: n. sp.
Stenopus anguineus, Ancey, radula; SUTER, Rev. Mus. Paulista iv, p. 332.
Trochomorpha kuesteri, varieties of; MOELLENDORFF, J. Malac. vii, p. 104.
Trochonanina platysoma, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 140, fig.: n. sp.
Vitrea rhoasii, note on distribution; WALKER, Nautilus xiv, p. 8: *V. petrophila*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 138.
Vitrea harimensis, Japan; PILSBRY, t. c. p. 384: *V. actinophora*, Galapagos; DALL, t. c. p. 93, fig.: *V. clingmani*, Gt Smoky Mts.; DALL in PILSBRY, t. c. p. 150, fig.: n. spp.
Vitrina caperata, Gould, anatomy; GODWIN-AUSTEN in SYKES (509), p. 277: *V. pellucida*, sinistral specimen; RIEMENSCHNEIDER, Nachrbl. Deutsch. malak. Ges. 1900, p. 116.
Vitrinizonites latissimus, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 137.
Zonites rollei, Kobelt, genitalia; COLLINGE, P. Malac. Soc. London iv, p. 37.
Zonitoides neomexicanus, Cockrell & Pils., New Mexico; PILSBRY, Nautilus xiii, p. 114: n. sp.

ARIONIDÆ.

- Anadenus dautzenbergi*, China; COLLINGE, J. Malac. vii, p. 134, fig.: n. sp.
Ariolimax steindachneri, Puget Sound; BABOR, Ann. Hofmus. Wien xv, p. 95: n. sp.
Geomalacus maculosus, eggs and young of; ROGERS (446): *G. maculosus*, noted on; ADAMS, J. Conch. ix, p. 301.
Oopelta flavescens, granulosa, S. Africa; COLLINGE, Ann. S. African Mus. ii, p. 6, figg.: n. spp.
Tetraspis, n. gen. for *T. letourneuxi*, n. sp., S. Europe; HAGENMÜLLER, Bull. Soc. malac. France ii, p. 303 [1885].

ENDODONTIDÆ.

- Charopa kubaryi, ponapica*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 110: n. spp.
Endodontia (Thaumatodon) callizona, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 110: *E. helleri*, Galapagos; DALL, P. Ac. Philad. 1900, p. 93, fig.: n. spp.
Flammulina nigrescens, note on anatomy; SUTER in MOELLENDORFF, J. Malac. vii, p. 106.
F. (Calymna) nigrescens, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 107: n. sp.
Garrettia, n. n. for *Libera*, Garrett nec Haan; COSSMANN, Rev. paleozool. iv, p. 43 [*Garrettia* is preocc., *Libera* does not appear to have been proposed by Haan as a genus].
Helicodiscus eigenmanni, Texas; PILSBRY, Nautilus xiv, p. 41: n. sp.
Helix rotundata, scalariform; CARTER, Sci. Gossip vii, p. 96.
Helix (Phasis) sesquicincta, German East Africa; MARTENS, SB. Ges. naturf. Berlin 1900, p. 117: *H. dictyonina*, New Caledonia; EUTHYME, Bull. Soc. malac. France ii, p. 257 [1885]: n. spp.
Libera, Garrett, renamed *Garrettia*, q.v.
Patula digonophora, Hawaiian Islands; ANCEY, Bull. Soc. malac. France vi, p. 171 [1889]: n. sp.
Pitys elise, Hawaiian Islands; id. t. c. p. 180 [1889]: n. sp.
Platystoma, Ancey, renamed *Saissetia*, q.v.

- Punctum japonicum*, Japan; PILSBRY, Nautilus xiv, p. 82: *P. blandianum*, Gt Smoky Mts; PILSBRY, P. Ac. Philad. 1900, p. 148: n. spp.
Pyramidula alternata, n. var.; PILSBRY, Nautilus xiii, p. 114.
Pyramidula elrodi, Montana; PILSBRY, Nautilus xiv, p. 40: *P. pretiosa*, Japan; GUDÉ, Ann. Nat. Hist. vi, p. 454: *P. patagonica*, subfossil, Patagonia, p. 334; *schuppi*, Brazil, p. 335; SUTER, Rev. Mus. Paulista iv, figg.: n. spp.
Saissetia, n. n. for *Platystoma*, Ancey nec Klein; ANCEY, Bull. Soc. malac. France v, p. 368 [1888].

HELICIDÆ.

- Acavus*, anatomy of genus; RANDLE, P. Malac. Soc. London iv, pp. 103-113: Note on genus; SYKES, t. c. p. 114.
Acavus polei, Ceylon; COLLETT, J. Ceylon Asiat. Soc. xv, p. 153, fig.: n. sp.
Amphidromus should be transferred here from *Bulimidae*; PILSBRY in TRYON (529).
Ashmunella, anatomy of; PILSBRY, P. Ac. Philad. 1900, pp. 107-109: *A. hyporhyssea*, new varieties of; COCKERELL, Nautilus xiv, p. 72.
Camenzella fruhstorferi, p. 129, *nigricans*, p. 130, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900: n. spp.
Campylaea frigida, variation of; ANDREAE, Mt. Mus. Hildesheim xii, p. 10.
Campylaea cathaica, n. subgen. of *Cathaica*, type *C. przewalskii*, Mart.; ANDREAE, t. c. p. 5.
Cathaica, on the genus, with new names and figures, but no diagnoses; ANDREAE, t. c.: *C. przewalskii*, variation of; ANDREAE, t. c.
Cathaica obrutsczevi, p. 25, *perversa*, p. 26, Kansu; STURANY, Denk. Ak. Wien lxx, figg.: n. spp.
Chloritis (Trichochloritis) fragilis, Japan; GUDÉ, P. Malac. Soc. London iv, p. 70, fig.: n. sp.
Epiphragmophora, aestivation of; WILLIAMSON, Nautilus xiv, p. 13: *E. mormonum*, new varieties; PILSBRY, op. cit. xiii, p. 128: *E. oresigena*, n. var.; IHERING in PILSBRY, P. Ac. Philad. 1900, p. 389.
Epiphragmophora harperi, California; BRYANT, Nautilus xiii, p. 143: *E. bowersi*, California; BRYANT, Nautilus xiii, p. 122: *E. leucanthea*, Cerros I., p. 99, *crassula*, Natividad I., p. 100, (*Micrarionta*) *guadelupiana*, Guadelupe I., p. 101, *catalinae*, Catalina I., (*kelletii*, var. ?) *clementina*, San Clemente I., p. 103, *orcuttii*, Lower California, p. 104; DALL, P. Ac. Philad. 1900, figg.: n. spp.
Eucathaica, n. subgen. of *Cathaica*, type *C. fasciola*, Drap.; ANDREAE, Mt. Mus. Hildesheim xii, p. 3.
Euhadra luhuana, n. var.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 108.
Euhadra (?) pseudocampylea, borders of Thibet and Setchuen; ANCEY, Nautilus xiv, p. 83: n. sp.
Eulota mercatoria and *E. caliginosa* are distinct species, with n. vars. of former, *E. callizona*, and *E. luhuana*; PILSBRY & GULICK, Nautilus xiv, pp. 88-91: *E. callizona*, n. var.; PILSBRY, Nautilus xiv, p. 60: *E. tourannensis*, n. var.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 131.
Eulota (Eulotella) micronesica, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 110: *E. gudeana*, Japan; PILSBRY, Nautilus xiv, p. 60: *E. (Plectotropis) kiusiuensis*, Japan; PILSBRY, t. c. p. 79: *E. horrida*, (*Trishoplita* ?) *mesogonia*, Japan; PILSBRY, t. c. p. 11: *E. (Euhadra) grata*, Japan; GUDÉ, Ann. Nat. Hist. vi, p. 455: *E. hirasei*, p. 10, *awajiensis*, p. 11, Japan; GUDÉ, P. Malac. Soc. London iv, figg.

- [respectively synonyms of *caricollis*, Pils., and *aperta*, Pils.; GUDE, t. c. p. 78]: *E. (Plectotropis) œmula*, p. 71, (*Euhadra*) *sericea*, p. 74, Japan, (*Plectotropis*) *lepidophora*, Loo-Choo Is., p. 76; GUDE, t. c., figg. : n. spp.
- Ganesella jacobii*, Japan; PILSBRY, *Nautilus* xiv, p. 12: *G. turrita*, Loo-Choo Is.; GUDE, P. Malac. Soc. London iv, p. 75, fig.: *G. tosana*, Japan; GUDE, Ann. Nat. Hist. vi, p. 455: *G. pagodula*, Japan; EHREMMANN, Zool. Anz. xxiii, p. 381: n. spp.
- Helicida*, anatomy of several species; WIEGMANN (559): Notes on classification; MOELLENDORFF (338): 'Convergenczerscheinung' in; ANDREE (12): Note on 'rock-boring'; BOYCOTT, Sci. Gossip vi, p. 280: *Helices* boring rocks; HARLÉ (216): *H. albolabris*, growth of; MORRELL, *Nautilus* xiv, p. 9: *H. aspersa*, scalariform; PERCEVAL, Sci. Gossip vi, p. 253: *H. ericetorum*, sinistral; WELCH, Irish Natural. ix, p. 21: *H. lapicida*, sinistral; PARTRIDGE, J. Malac. vii, p. 180: *H. marmorata*, albino var.; JONES, J. Conch. ix, p. 302: *H. nemoralis*, abnormalities in; WELCH (551); GREEN, Irish Natural. ix, p. 271: *H. pomatia*, variation of genital organs; PEGOT (376): *H. pomatia*, blood of; PHISALIX, C.R. Soc. Biol. vii, p. 729: *H. pomatia*, supplement to revision of varieties; BUCHNER, Jahresber. Ver. Wurtemb. lvi, pp. 224-237: *H. pomatia*, radula; TEMPÈRE (523).
- Helix cerisi*, I. of Capri; BELLINI, Boll. Soc. zool. Ital. i, p. 39: *H. leontinei*, France; GERMAIN, Bull. Soc. Rouen xxxiv, p. 197: *H. infrafusca*, p. 177, *fulleborni*, p. 178, *binaria*, p. 179, German East Africa; MARTENS, S.B. Ges. naturf. Berlin 1900: *H. (Camæna) lavezzi*, pp. 108, 435, (*C.*) *vorvonga*, pp. 108, 436, (*Euhadra*) *fauveli*, pp. 110, 437, (*Eulota*) *vignalii*, pp. 110, 439, (*Chloritis*) *marimberti*, pp. 111, 440, (*C.*) *durandi*, pp. 111, 441, (*C.*) *gereti*, (*Ganesella*) *saurivonga*, pp. 112, 442, (*G.*) *coudeini*, pp. 113, 443, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlvi, figg.: *H. (Macularia) grossularia*, p. 122, (*Xeroleuca*) *subuta*, p. 123, Morocco; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900: *H. aimophilopsis*, Switzerland; VILLESERRE, Bull. Soc. malac. France ii, p. 15 [1885]: *H. ilicis*, p. 51, *suberia*, p. 54, *evenosi*, p. 56, *euthymearia*, p. 59, *actiella*, p. 62, *ademata*, p. 65, *avenionensis*, p. 67, *tassyana*, p. 70, *salentina*, p. 73, *jusiana*, p. 76, France; LOCARD, t. c. [1885]: *H. szecsenyi*, China; ANCEY, t. c. p. 131 [1885]: *H. ergilensis*, p. 232, *sesteri*, p. 233, Diarbekir, *ninivita*, p. 234, Mossoul; GALLAND, t. c. [1885]: *H. oppidi*, p. 273, *transfuga*, p. 275, Lower Pyrenees; FAGOT, t. c. [1885]: *H. knitteli*, Austria, p. 400, *wittmanni*, Russia, p. 408; SERVAIN, op. cit. vi [1889] : n. spp.
- Iosomeria subcastanea*, note on, with n. var.; GUDE, J. Malac. vii, p. 144, fig.
- Levunitina mardinensis*, Mesopotamia; KOBELT, Nachrbl. Deutsch. malak. Ges. 1900, p. 156: n. sp.
- Metodontia griphodes*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 23, fig.: n. sp.
- Metostracon*, n. gen. for *M. mima*, n. sp., Mexico; PILSBRY, P. Malac. Soc. London iv, pp. 24-27, fig.
- Platypetasus obruteschewi*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 26, fig.: n. sp.
- Plectopylis giardi*, note on; FISCHER, Bull. Sci. France Belgique xxxii, p. 329.
- Plectopylis francoini*, Tonkin; FISCHER, t. c. p. 330: *P. lepida*, Tonkin; GUDE, Ann. Nat. Hist. v, p. 313: *P. jugatoria*, China; ANCEY, Bull. Soc. malac. France ii, p. 127 [1885] : n. spp.
- Plectotropis conica*, Japan; GUDE, Ann. Nat. Hist. vi, p. 400: *P. chondroderma*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 131: *P. comata*, South Kansu; STURANY, Denk. Ak. Wien lxx, p. 26, fig.: n. sp.

- lxx, p. 18, fig. : *P. delectabilis*, *pachysoma*, p. 380, *polyplecta*, p. 379, Japan ; EHRMANN, Zool. Anz. xxiii : n. spp.
Pliocathaica, n. subgen. of *Cathaica*, type *C. pulveratrix*, Mart. ; ANDREAE, Mt. Mus. Hildesheim xii, p. 3.
Polygyra andrewae, n. var., pp. 123, 125, *edwardsi*, n. var., p. 129, *hirsuta*, n. var., p. 132 ; PILSBRY, P. Ac. Philad. 1900 : *P. hirsuta*, n. var. ; PILSBRY, t. c. p. 453 : *P. uvulifera*, note on with n. var. ; PILSBRY, Nautilus xiii, p. 107.
Polygyra pilosbryi, Arkansas ; FERRISS, Nautilus xiv, p. 29 : n. sp.
Polygyratia stenostrepta, n. var. ; PILSBRY, P. Ac. Philad. 1900, p. 389.
Polygyratia sargentii, *affinis*, Peru ; PILSBRY, t. c. p. 388 : n. spp.
Pseudara derbyi, Brazil ; IHERING, Rev. Mus. Paulista iv, p. 546, fig. : n. sp.
Satsuma brunnea, West Japan ; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 107 : *S. (?) kutupaensis*, South Kansu ; STURANY, Denk. Ak. Wien lxx, p. 28, fig. : n. sp.
Solaropsis, notes on genus, with anatomy ; IHERING (241) : *S. heliaca*, anatomy ; WIEGMANN, Nachrbl. Deutsch. malak. Ges. 1900, p. 178.
Solaropsis pilosbryi, p. 544, *bachi*, p. 545, Brazil ; IHERING, Rev. Mus. Paulista iv, figg. : n. spp.
Sonorella, n. gen., type *Epiphrammophora hachitana*, Dall, with anatomy ; PILSBRY, P. Ac. Philad. 1900, p. 556.
Stilpnodiscus euphyes, South Kansu ; STURANY, Denk. Ak. Wien lxx, p. 19, fig. : n. sp.
Thysanophora ceca, Guppy, radula ; SUTER, Rev. Mus. Paulista iv, p. 335 : *T. hornii*, note on ; PILSBRY, Nautilus xiii, p. 98.
Trishoplita goodwini, n. var. ; PILSBRY, op. cit. xiv, p. 80 : *T. goodwini*, n. var. ; PILSBRY & GULICK, t. c. p. 90.
Trishoplita pallens, Japan ; EHRMANN, Zool. Anz. xxiii, p. 381 : *T. cretacea*, p. 400, *dacosta*, p. 454, Japan ; GUDE, Ann. Nat. Hist. vi : n. spp.
Vallonia pulchella in California ; STEARNS, Nautilus xiv, p. 65.
Xanthonyx is not a synonym of *Binneya* but belongs to *Helicidae*, as may *Cryptotracon* ; PILSBRY (399).
Xerocathaica, n. subgen. of *Cathaica*, type *C. kreitneri*, Hilber ; ANDREAE, Mt. Mus. Hildesheim xii, p. 4.

BULIMIDÆ, ORTHALICIDÆ, and BULIMULIDÆ.

- Amphidromus* belongs to *Helicidae*, with review of genus and n. var. of *A. sinensis*, p. 192, of *A. xiengensis*, pp. 195 & 196 ; PILSBRY in TRYON (529).
Amphidromus semifrenatus, Sumatra ; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 8 : *A. placostylus*, Annam ; MOELLENDORFF, t. c. p. 132 : *A. metabletus*, p. 22, *ingens*, p. 23, Annam ; MOELLENDORFF, t. c. : n. spp.
Bothriembryon, review of genus, with n. vars. of *B. inflatus*, p. 5, *physoides*, p. 10 ; PILSBRY in TRYON (529).
Bulimus dukanfieldi, Brazil ; MELVILL, P. Malac. Soc. London iv, p. 116, fig. : *B. endograssi*, *approximatus*, p. 90, *hoodensis*, p. 91, *indefatigabilis*, p. 92, Galapagos ; DALL, P. Ac. Philad. 1900, figg. : *B. (Drymaeus) inusitatus*, Costa Rica ; FULTON, Nautilus xiv, p. 87 : *B. steerii*, p. 391, *haematoxpira*, Peru, p. 392 ; PILSBRY, P. Ac. Philad. 1900 : n. spp.
Bulimus irregularis, Pfr., note on ; JOUSSEAUME, Bull. Soc. Philom. ii, p. 39.
Bulimus insignior, p. 242, *servaini*, p. 244, New Caledonia ; EUTHYME, Bull. Soc. malac. France ii [1885] : n. spp.
Callistocharis, n. sect. of *Placostylus*, type *P. malleatus* ; PILSBRY in TRYON (529), p. 102.

- Clavator placostyloides*, Madagascar ; KOBELT, Nachrbl. Deutsch. malak. Ges. 1900, p. 21 : *C. vaysierei*, Madagascar ; ANCEY, J. Conchyl. xviii, p. 12, fig. : n. spp. [Are both synonyms of *Bulimus grandidieri*, Cr. & Fisch ; DAUTZENBERG, J. Conchyl. xviii, p. 461.]
- Eurytus couturei*, Bolivia ; ANCEY, Nautilus xiv, p. 42 : *E. argenteus*, Venezuela ; JOUSSEAUME, Bull. Soc. Philom. ii, p. 41, fig. : n. spp.
- Leucocharis*, n. sect. of *Placostylus*, type *P. pancheri* ; PILSBRY in TRYON (529), p. 67.
- Pachnodus sagittarius*, Mayotte ; ANCEY, Bull. Soc. malac. France ii, p. 144 [1885] : n. sp.
- Partula*, systematic position of, with anatomy of *P. rosea* ; PILSBRY (396) : *P. rufo*, new varieties ; MOELLENDORFF, J. Malac. vii, p. 112.
- Placocharis*, n. sect. of *Placostylus*, type *P. macgillivrayi* ; PILSBRY in TRYON (529), p. 77.
- Placostylus*, review of genus, with *P. coxiana*, n. n. for *P. coxi*, Hartman nec Pease, p. 118 ; PILSBRY in TRYON (529).
- Placostylus heterostylus*, New Hebrides, p. 72, *garretti*, p. 103, hab. unknown ; PILSBRY in TRYON (529), figg. : n. spp.
- Plecochilus dalmasi*, Santa Marta ; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 151, fig. : n. sp.
- Rhoda*, see post p. 67.
- Strophocheilus paranaguensis* (Pils. & Ihering), Brazil ; PILSBRY, P. Ac. Philad. 1900, p. 390, fig. : *S. pilsbryi*, Brazil ; IHERING, t. c. p. 394, fig. : n. spp.

BULIMINIDÆ, CYLINDRELLIDÆ, and PUPIDÆ.

- Bensonella*, n. sect. of *Bifidaria*, type *Pupa plicidens*, Bens. ; PILSBRY, P. Ac. Philad. 1900, p. 591 [footnote].
- Berendtia*, note on ; PILSBRY, t. c. p. 554.
- Bonnanius*, n. gen. for *B. bouvieri*, n. sp., hab. unknown [apparently Sokotra] ; JOUSSEAUME, Bull. Soc. Philom. ii, p. 39, fig. : n. sp.
- Buliminidæ*, monograph continued ; KOBELT in MARTINI & CHEMNITZ (311) : *B. extorris*, n. var. ; PILSBRY, Nautilus xiv, p. 32.
- Buliminus* (*Napaeus*) *simrothi*, Azores ; KOBELT in MARTINI & CHEMNITZ (311), p. 659, fig. : *B. bambuseti*, German East Africa ; MARTENS, SB. Ges. naturf. Berlin 1900, p. 118 : *B. messageri*, Tonkin ; BAVAY & DAUTZENBERG, J. Conchyl. xviii, pp. 114, 445, fig. : *B. (Petræus) pilsbryanus*, Arabia ; ANCEY, Nautilus xiv, p. 43 : *B. rugulosus*, West Japan ; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 108 : *B. hirasei*, p. 32, *callistoderma*, p. 33, Japan ; PILSBRY, Nautilus xiv : *B. schypaensis*, p. 28, *obrutschewi*, p. 29, *diaprepes teres*, p. 30, *xeramelinus*, p. 31, *commensalis ottonis*, p. 32, *asuphes amphidoxus*, p. 33, *interstratus euonymus*, p. 34, South Kansu ; STURANY, Denk. Ak. Wiss. lxx, figg. : n. spp.
- Buliminopsis*, anatomy ; WIEGMANN (559).
- Bulimus heliocane*, Aden ; JOUSSEAUME, Bull. Soc. malac. France vi, p. 346 [1889] : n. sp.
- Cerion stevensonii*, Bahamas ; DALL, Nautilus xiv, p. 65 : n. sp.
- Clavatula biplicata*, white var. ; STANDEN, J. Conch. ix, p. 331 : *C. ventricosa*, having two mouths ; RIEMENSCHNEIDER, Nachrbl. Deutsch. malak. Ges. 1900, p. 114 : *C. postcornea*, n. n. for *C. cornea*, Phil. nec Schroeter ; JOUSSEAUME, Bull. Soc. Philom. ii, p. 11 : *C. deyrollei* is a synonym of *C. perezi* ; JOUSSEAUME, t. c. p. 21 : *C. japonica*, n. var. ; PILSBRY, P. Ac. Philad. 1900, p. 447 [=oostoma, Middff. ; PILSBRY, t. c. p. 677] : *C. bidentata*, with two mouths ; ORE, J. Conch. ix, p. 374 : *C. brevior*, n. var. ; PILSBRY, P. Ac. Philad. 1900, p. 677.

- Clausilia* (*Phedusa*) *cincticollis*, p. 383, (*P.*) *crassilamellata*, (*P.*) *ijima*, p. 382, Japan; EHRMANN, Zool. Anz. xxiii: *C.* (*Euphedusa*) *comes*, p. 673, (*E.*) *monelasmus*, (*E.*) *iotaptyx*, p. 674, (*Tyannophedusa*, n. sect.) *mikado*, p. 676, (*Stereophedusa*) *hondana*, p. 677, (*S.*) *sub-japonica*, p. 678, (*Hemiphedusa*) *nolani*, p. 679, (*H.*) *tosana*, p. 680, (*H.*) *shikokensis*, p. 681, Japan; PILSBRY, P. Ac. Philad. 1900, figg.: *C. callistomella*, pp. 114, 446, *gereti*, pp. 115, 447, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, figg.: *C. granulosa*, Peru; SYKES, J. Malac. vii, p. 166, fig.: *C.* (*Euphedusa*) *oncaruchen*, West Japan; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 109: *C. hakonensis*, p. 443, *arajensis*, *subaurantiaca*, p. 444, *aulacophora*, p. 445, *hirasei*, *hyperoptyx*, p. 446, Japan; PILSBRY, P. Ac. Philad. 1900, figg.: *C. elatior*, China; ANCET, Bull. Soc. malac. France ii, p. 134 [1885]: *C. bajamontiana*, p. 198, *bonscoiana*, p. 199, Dalmatia; LETOURNEUX, t. c. [1885]: n. spp.
- Calocentrum irregular*, note on, with n. var. of *C. minorinum*; PILSBRY, P. Ac. Philad. 1900, pp. 551, 553, fig.
- Calocentrum eisenianum*, Lower California; PILSBRY, t. c. p. 553, fig.: n. sp.
- Exbalea*, n. gen. for *Balea peruviana*, Phil.; JOUSSEAUME, Bull. Soc. Philom. ii, p. 34.
- Hypselostoma annamiticum*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 133: n. sp.
- Immersidens*, n. sect. of *Bifidaria* for *B. ashmuni* and *perversa*; PILSBRY & VANATTA, P. Ac. Philad. 1900, p. 606.
- Lyropupa*, n. sect. of *Nesopupa* (q.v.) for *Pupa lyrata*, Gld.; PILSBRY, t. c. p. 432.
- Nenia geayi*, p. 14, Venezuela, *archidoma*, p. 15, *cocaensis*, p. 16, Ecuador, *rochebrunii*, p. 19, Colombia, *femurina*, p. 21, *auriculina*, p. 22, Ecuador, *versicolor*, p. 25, hab. not given, *cousini*, p. 32, Ecuador; JOUSSEAUME, Bull. Soc. Philom. ii, figg.: n. spp.
- Nesopupa*, n. gen. for *Pupa tantilla*, Gld.; PILSBRY, P. Ac. Philad. 1900, p. 432.
- Pupa iheringi*, subfossil, Brazil; SUTER, Rev. Mus. Paulista iv, p. 336, fig.: n. sp.
- Pupidae*, review of United States species; PILSBRY & VANATTA (421): Notes on Australian species; PILSBRY (390): On Polynesian species; PILSBRY (391).
- Pupopsis*, n. gen. for *Buliminus pupopsis*, Gredler; STURANY, Denk. Ak. Wien lxx, p. 36. [Author refers to Gredler (Zool. Rec. 1898, no. 161), but genus was not then definitely proposed.]
- Pupopsis dissociabilis*, p. 35, *polystrepta*, *paraplesia*, p. 36, South Kansu; STURANY, t. c. figg.: n. spp.
- Steeriana*, n. gen. for *Clausilia malleolata*, &c.; JOUSSEAUME, Bull. Soc. Philom. ii, p. 33.
- Tyannophedusa*, n. sect. of *Clausilia*, type *C. mikado*, n. sp.; PILSBRY, P. Ac. Philad. 1900, p. 676.
- Vertigo cubana*, Dall, is a synonym of *Pupa costata*, Pse., and not from Cuba; PILSBRY, t. c. p. 432.
- Vertigo norfolkensis*, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 145, fig.: *V.* (*Ptychochilus*) *ponapica*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 113: *V. columbiana* (Sterki MS.), Vancouver and various locs. in U.S.A.; PILSBRY & VANATTA, P. Ac. Philad. 1900, p. 602, fig.: *V. cocosensis*, Cocos I.; DALL, t. c. p. 98, fig.: n. spp.
- Zaptyx*, n. sect. of *Clausilia*, type *C. hirasei*, Pils.; PILSBRY, t. c. p. 672.

STENOGLYRIDÆ and ACHATINELLIDÆ.

- Achatina zebra*, Transvaal, p. 118, *passargei*, German East Africa, p. 119; MARTENS, SB. Ges. naturf. Berlin 1900 : n. spp.
- Achatinellidae*, review of the family, with *A. confusa*, n. n. for *A. physa*, Newc. 1855 nec 1854, p. 312; SYKES (509) : *Achatinella*, systematic position of, with anatomy of *A. dolei*; PILSBRY (396).
- Achatinella* (*Achatinellastrum*) *wailuaensis*, Maui; SYKES (509), p. 328, fig. : n. sp.
- Amastrella*, n. subgen. of *Amastra* for *A. rugulosa*, Pease; SYKES (509), p. 352.
- Auricula persini*, Oahu; SYKES (509), p. 377, fig. : n. sp.
- Cacilioides acicula*, notes on; ADAMS, J. Conch. ix, p. 297.
- Digoniaxis*, n. gen. for *D. bourguignati*, n. sp.; JOUSSEAUME, Bull. Soc. malac. France vi, p. 348 [1888].
- Ganomidos fraterculus*, Congo Free State; DUPUIS & PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull. p. xiii, fig. : n. sp.
- Kauaia*, n. n. for *Carinella*, Pfr. nec Sby.; SYKES (509), p. 355.
- Leptachatina acuminata*, Gould, radula; GODWIN-AUSTEN in SYKES (509), p. 357.
- Leptachatina arborea*, p. 357, Hawaii, *conicoides*, p. 359, Molokai, *converiscula*, p. 360, Oahu, *emerita*, p. 361, Molokai, *imitatrix*, *konaensis*, p. 364, Hawaii, *supracostata*, p. 370, Lanai, *vana*, p. 371, Oahu; SYKES (509), figg. : n. spp.
- Leptinaria (Neosubulina) martensi*, Cocos I.; DALL, P. Ac. Philad. 1900, p. 97, fig. : n. sp.
- Limicolaria oviformis*, Arabia; ANCEY, Nautilus xiv, p. 42 : *L. bourguignati*, p. 157, *spekiana*, *burtoniana*, p. 160, *bridouzi*, p. 161, Central Africa; GRANDIDIER, Bull. Soc. malac. France ii [1885] : n. spp.
- Opeas prasinum*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 114 : n. sp.
- Perdicella fulgorans*, Maui; SYKES (509), p. 329, fig. : n. sp.
- Perideriopsis fallensis*, p. xiii, *mrvlaensis*, p. xiv, Congo Free State; DUPUIS & PUTZEYS, Ann. Soc. malac. Belgique xxxiv, Bull., figg. : n. spp.
- Rhodesa couzini*, p. 36, *equatoensis*, p. 37, Ecuador, *gereti*, p. 38, Colombia; JOUSSEAUME, Bull. Soc. Philom. ii, figg. : n. spp.
- Tornatellina ovatula*, *pusilla*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 114 : *T. compacta*, Hawaii, *confusa*, Kauai, p. 380, *cylindrica*, Oahu and Kauai, p. 381, *perkinsi*, Kauai, p. 382, *trochoides*, Lanai, p. 383; SYKES (509), figg. : n. spp.

SUCCINEIDÆ, and VERONICELLIDÆ.

- Atopos* (*Padangia*, n. subgen.) *schildii*, Sumatra; BABOR, Ann. Hofmus. Wien xv, p. 100 : n. sp.
- Padangia*, n. subgen. of *Atopos* for *A. schildii*, n. sp.; BABOR, t. c. p. 100.
- Succinea campestris*, n. var.; PILSBRY, Nautilus xiv, p. 74.
- Succinea* (*rusticana*, var.?) *guadelupensis*, Guadelupe I.; DALL, P. Ac. Philad. 1900, p. 102, fig. : *S. protracta*, Hawaii, SYKES (509), p. 388, fig. : n. spp.
- Triboniophorus*, anatomy; PFEIFFER, Zool. Jahrb. Anat. xiii, pp. 333-358, fig.
- Veronicella*, notes on; COCKERELL, Nautilus xiii, p. 131.

Veronicella gilsoni, Fiji Islands; COLLINGE, J. Malac. vii, p. 179: *V. willseyi*, Lifu, p. 431, *brunnea*, Esafate, p. 435; COLLINGE in WILLEY'S Zool. Results, pt. IV, figg. : n. spp.

BASOMMATOPHORA.

AURICULIDÆ, LIMNÆIDÆ, and PHYSIDÆ.

Alexia myosotis, n. var.; PILSBRY, Nautilus XIV, p. 40.

Alexia (*Kochia*, n. sect.) *oronica*, p. 240, (*Pseudomelampus*, n. sect.) *kochi*, (*P.*) *jolyi*, p. 241, Oran; PALLARY, J. Conchyl. XLVIII, first two figg. : n. spp.

Ancylus fluviatilis, note on; CROWTHER, Halifax Natural. v, pp. 56 & 57.

Ancylus sharpi, Oahu; SYKES (509), p. 394, fig. : n. sp.

Auriculina, n. sect. of *Auricula*, type *A. gangetica*, Bens.; KOEHL in MARTINI & CHEMNITZ, *Auriculacea*, p. 77 [1898].

Carychium minimum, notes on; ADAMS, J. Conch. ix, p. 301.

Kochia, n. sect. of *Alexia* for *A. denticulata*, Mont., and others; PALLARY, J. Conchyl. XLVIII, p. 239.

Limnea, variation of; JOHANSEN (247): *L. stagnalis*, development of; DYBOWSKI, Nachrbl. Deutsch. malak. Ges. 1900, pp. 111-114: *L. micheli*, habits of; WALKER, Nautilus XIV, p. 8: *Limnea*, note on 'hybrids'; WEBB, Sci. Gossip vi, p. 280: *L. binominis*, n. n. for *Physa sandwichensis*, Clessin; SYKES (509), p. 391: *L. stagnalis* and *L. auricularia*, cross between; CHASTER, J. Conch. ix, p. 282: *L. burnetti* and *L. involuta*, notes on; ADAMS, t. c. p. 299: *L. intermedia* and *marginata*, notes; LOCARD, Bull. Soc. malac. France ii, p. 79 [1885].

Melampus biscayensis, Gulf of Gascony; FISHER, J. Conchyl. XLVIII, p. 68, fig.: *M. stirgousus*, W. Costa Rica; MARTENS, Biol. Centr.-Amer. p. 561, fig. : n. spp.

Physa, notes on Illinois species, with radula of *P. gyrina*; BAKER (23): *P. moussonii*, n. n. for *P. lirata*, Mousson nec Tristram; ANCEY, Nautilus XIV, p. 83.

Planorbis, early development; HOLMES (234): *P. corculentus*, Say, is a good species; WALKER, Nautilus XIII, p. 133: supplemental note on; WALKER, op. cit. XIV, p. 33.

Planorbis persicus, Persia; ANCEY, t. c. p. 83: *P. exarescens*, neumayri, Central Asia; STURANY, Denk. Ak. Wien lxx, p. 38, figg. : n. spp.

Pseudomelampus, n. sect. of *Alexia* for *Melampus exiguum*, Lowe, and others; PALLARY, J. Conchyl. XLVIII, p. 240.

SIPHONARIIDÆ, GADINIIDÆ, AND AMPHIBOLIDÆ.

Ampullarina, auct. nec Sby., renamed *Salinator*, q. v.

Gadinia requieni, Mediterranean; LOCARD, Echange XVI, p. 75: n. sp.

Salinator, n. n. for *Ampullarina*, auct. nec Sby.; HEDLEY, P. Linn. Soc. N. S. Wales XXV, p. 511.

Scutulum, Monts., renamed *Williamia*, q. v.

Siphonaria henica, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 524, fig. : n. sp.

Williamia, n. n. for *Scutulum*, Monts. nec Tournouer; MONTEROSATO (584), p. 150.

OPISTHOBRANCHIATA.

Opistobranchs, classification; GUIART (207).

NUDIBRANCHIATA.

- Kolidiella drusilla*, p. 233, *faustina*, p. 235, New Zealand; BERGH, Zool. Jahrb. Syst. xii, figg. : n. spp.
- Aldisa zetlandica*, figure and anatomy; BERGH (38).
- Ancylodoris baicalensis*, Lake Baikal; DYBOWSKI, Nachrbl. Deutsch. malak. Ges. 1900, p. 143, fig. : n. sp.
- Archidoris nyctea*, Bare Island, Vancouver; BERGH, Zool. Jahrb. Syst. xiii, p. 222, fig. : n. sp.
- Atthila ingolfiana*, n. gen. and sp., S. W. of Iceland, forms also n. fam. *Atthilidae*; BERGH, Danish Ingolf-Exped. ii, No. 3, p. 23, fig.
- Bathydoris ingolfiana*, Davis Strait; BERGH, t. c., No. 3, p. 8, fig. : n. sp.
- Candielia ingolfiana*, S. W. of Iceland; BERGH, t. c., No. 3, p. 19, fig. : n. sp.
- Chromodoris (?) roseopicta*, Bermudas; VERRILL, Tr. Connect. Ac. x, p. 549, fig. : n. sp.
- Coryphella (?) pallida*, Bermudas; VERRILL, t. c. p. 547 : n. sp.
- Discodoris triatis*, Azores; BERGH, Result. Camp. Scient. xiv, p. 11 : n. sp. [apparently new, but not so marked].
- Doridoxa ingolfiana*, n. gen. and sp., Davis Strait, forms also n. fam. *Doridoxidae*; BERGH, Danish Ingolf-Exped. ii, No. 3, p. 16, fig.
- Doris (?) bistrigata*, olivacea, Bermudas; VERRILL, Tr. Connect. Ac. x, p. 548, first figd. : n. spp.
- Euplocamus atlanticus*, anatomy; BERGH (38).
- Fiona marina*, radula; BERGH (38) : *F. nobilis*, radula; TEMPÈRE (523).
- Glaucus atlanticus*, note on; BERGH (38).
- Gonièolis intermedius*, p. 36, *atypica*, p. 37, Davis Strait; BERGH, Danish Ingolf-Exped. ii, No. 3, figg. : n. spp.
- Lamellidoris lactea*, p. 548, (?)*quadrimaculata*, p. 549, Bermudas; VERRILL, Tr. Connect. Ac. x, last figd. : n. spp.
- Platydoris argo*, anatomy; BERGH (38).
- Samla*, n. gen. for *S. annuligera*, n. sp., Laysan Island; BERGH, Zool. Jahrb. Syst. xiii, p. 237, fig.

TECTIBRANCHIATA.

- Tectibranchiata*. Anatomy, classification and phylogeny; GUIART, Causeries Scient. Soc. Zool. France 1900, No. 4, pp. 77-132, figg.
- Morphology of Tectibranchs; MAZZARELLI (323).
- Aplynia*, embryology; CARAZZI (79-82); GEORGEVITCH (184); MAZZARELLI (320-322): Nervous system; GUIART (208): Radula; TEMPÈRE (523): Visceral nervous system; BOTTAZZI & ENRIQUES, Arch. Ital. Biol. xxxiv, pp. 111-143.
- Aplyzia megaptera*, Bermudas; VERRILL, Tr. Connect. Ac. x, p. 545, fig. : n. sp.
- Bulla bermudae*, Bermudas; VERRILL & BUSH, t. c. n. 523, fig. : n. sp.
- Chelidonura plebeia*, Pacific Ocean; BERGH in ^a h. Philippien, Wiss. Result. iv. p. 1ⁿⁿ

- Cyllichnina*, n. gen. for *Cyllichna levigata*, Granata, etc.; MONTEROSATO (584), p. 143.
- †*Hamlinia*, n. g. of *Actaeonidae* for *Natica oliva*, Fraas, and others; BÖHM, Zeitschr. Deutsch. geol. Ges. lii, p. 214.
- Hermania*, n. sect. for *Bulla scabra*, Mull.; MONTEROSATO (584), p. 147.
- Joannisia*, n. gen. for *Tylodina citrina*, Joannis; MONTEROSATO (584), p. 149.
- Johania*, n. gen. for *Bulla retifera*, Forbes; MONTEROSATO (584), p. 147.
- Marsenia perspicua*, varieties; BERGH (38), p. 37.
- Marsenia leptolemma*, with anatomy, Azores; BERGH (38), p. 31, fig.: n. sp.
- Micrella*, n. gen. for *M. dubia*, n. sp., with anatomy, between Madeira and Azores; BERGH (38), p. 28, fig.
- Notarchus glaucus*, animal; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 97.
- Ocaniopsis amboinei*, Amboina; VAYSSIÈRE, J. Conchyl. xlvi, p. 9: n. sp.
- Ocanius*, note on genus with anatomy of *O. membranaceus*; BERGH (38).
- Oesiania*, n. sect. for *Philine monterosatoi*, Jeff.; MONTEROSATO (584), p. 147.
- Paraply sia lowii*, S. Africa; GILCHRIST, Tr. S. Africa Soc. xi, p. 122, fig.: n. sp.
- Pelta coronata*, 'embryogenic condensation' in; VAYSSIÈRE, Zool. Anz. xxiii, p. 286.
- Phyllaplysia taylori*, Vancouver Island; DALL, Nautilus xiv, p. 92: *P. pacifica*, Ralum; BERGH in SEMPER's Reisen im Arch. Philippinen, Wiss. Result. iv, p. 182, fig.: n. spp.
- Pleurobranchæa*, anatomy; BERGH (38).
- Pleurobranchæa capensis*, Cape of Good Hope; VAYSSIÈRE, J. Conchyl. xlvi, p. 10: n. sp.
- Pleurobranchopsis*, n. gen. for *P. aurantiaca*, n. sp., Bermudas; VERRILL, Tr. Connect. Ac. x, p. 547, fig.
- Pleurobranchus californicus*, California; DALL, Nautilus xiv, p. 92: n. sp.
- Pneumodermon*, development of; CARAZZI (81).
- Psyche*, Rang, renamed *Verillopsyche*, q. v.
- Ringicula kochiana*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 129, fig.: n. sp.
- Ringiculina*, n. gen. for *Ringicula leptocheila*, Brugn.; MONTEROSATO (584), p. 141.
- Roxamella*, n. sect. for *Cyllichna jeffreysi*, Weink.; MONTEROSATO (584), p. 145.
- Soaphander multistriatus*, Braz., figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 510.
- Tornatina decurrens*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 523, fig.: n. sp.
- Verillopsyche*, n. n. for *Psyche*, Rang nec Linn.; COSSMANN, Rev. paleozool. iv, p. 43.
- Volvula persimilis*, Mörch, note on with fig.; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 155.

NUCLEOBANCHIATA.

Pterotrachea, organs of hearing; SOLGER, Schr. Ges. Danzig x, p. 65.

PROSOBRANCHIATA.

Gonads in the Prosobranchs ; HALLER (213, 214).

PECTINIBRANCHIATA.

TOXOGLOSSA.

TEREBRIDÆ, CONIDÆ, and PLEUROTOMIDÆ.

- Catenotoma*, n. sect. of *Surcula*, for *S. catenata* (Lamk.), Eocene ; COSSMANN in COSSMANN & PISSARRO, Bull. Soc. géol. Normand. xix, p. 39.
Cirilla, n. sect. for *Pleurotoma linearis*, Mont. ; MONTEROSATO (584), p. 133.
- Cithara cognata*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 103, fig. : n. sp.
- Clathromangelia*, n. sect. for *Pleurotoma granum*, Phil. ; MONTEROSATO (584), p. 131.
- Clathrella lograndi*, Bedd., fidej. ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 509 ; *C. atropurpurea*, Monts. MS., n. n. for *C. purpurea*, auct. nec Montagu ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlii, p. 245.
- Clathrella cylindrica*, Monts. MS., Corsica ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlii, p. 248 : *C. sexdentata*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 104, fig. : n. spp.
- Conus*, review of the group of *C. textile* ; MELVILL (527) : *C. consors*, Sby., note on ; WHEELER, Nautilus xiv, p. 86 : *C. dalli*, Stearns, note on ; DAUTZENBERG, J. Conchyl. xlviii, p. 190.
- Conus grangeri*, hab. query ; SOWERBY, Ann. Nat. Hist. v, p. 441, fig. : *C. cholmondeleyi*, hab. unknown ; MELVILL, J. Conch. ix, p. 308, fig. : n. app.
- Cordieria*, n. gen. for *Pleurotoma reticulata*, Ren., etc. ; MONTEROSATO (584), p. 131.
- Crossopleura*, n. gen. for *Pleurotoma maravignæ*, Payr. ; MONTEROSATO (584), p. 127.
- Drillius gabrieli*, p. 100, *howitti*, p. 101, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, fidej. : *D. rhodochroa*, Rio Hacha, Santa-Marta, p. 165, *chazaliei*, Cumana, Rio Hacha, Santa-Marta, p. 166, *claudoni*, Rio Hacha, p. 167, *jouseaumei*, Santa-Marta, p. 168 ; DAUTZENBERG, Mem. Soc. zool. France xiii, fidej. : n. spp.
- Eurytus*, H. & A. Ad. nec Gistel, renamed *Mazatlania*, q. v.
- Ginnania*, n. sect. for *Pleurotoma fuscata*, Phil. ; MONTEROSATO (584), p. 127.
- Glyphostoma rugilabrum*, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 127, fig. : n. sp.
- Halia priamus*, anatomy ; POIRIER, Bull. Soc. malac. France ii, p. 17 [1885].
- Leufroyia*, n. gen. for *Pleurotoma leufroyi*, Mich., etc. ; MONTEROSATO (584), p. 134.
- Mangolia difficilis*, Monts. MS., Corsica ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlii, p. 243 : *M. flaccida*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 102, fig. : n. spp.
- Mazatlania*, n. n. for *Eurytus*, H. & A. Ad. nec Gistel ; DALL, Nautilus xiv, p. 44.
- Mitromorpha flindersi*, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 104, fig. : n. sp.

- Philbertia*, n. sect. for *Pleurotoma bicolor*, Risso, etc.; MONTEROSATO (584), p. 132.
Smithia, n. sect. for *Pleurotoma striolata*, Sc.; MONTEROSATO (584), p. 128.
Terebra fisticilis, Hinds, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 509.
Terebra apicitincta, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 5, fig.: n. sp.
Vielliersia, n. sect. for *Pleurotoma attenuata*, Mont.; MONTEROSATO (584), p. 128.

*RACHIGLOSSA.**OLIVIDÆ, MARGINELLIDÆ, VOLUTIDÆ, and MITRIDÆ.*

- Ancilla osculata*, Pondoland; SOWERBY, P. Malac. Soc. London iv, p. 3, fig.: n. sp.
Bullata, Jousseaume, renamed *Gibberulina*, q. v.
Fuscomitra, Monta. MS., n. sect. of *Mitra* for *M. fusca*, Rve.; PALLARY, J. Conchyl. xlvi, p. 263.
Gibberulina, n. n. for *Bullata*, Jousseaume; MONTEROSATO (584), p. 139.
Marginella tenisoni, n. n. for *M. cypraeoides*, T. Woods nec Anton; PRITCHARD, Victorian Natural xvii, p. 55.
Marginella ringicula, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 126, fig.: *M. whani*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 137, fig.: *M. cratericula*, *multiplicata*, p. 91, *biplicata*, Tasmania, *rimsoni*, Tasmania and S. Australia, p. 92, *mayri*; Tate, *oruliformis*, p. 93, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv: n. spp.
Mitra obtusa, apparently n. n. for *M. cornicula*, pars; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlvi, p. 232.
Mitra (Callithea) alabaster, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 126, fig.: *M. bathyraphæ*, *canaliculata*, *euzonata*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 4, figg.: n. spp.
Neptuneopsis gilchristi, anatomy; WOODWARD (570).
Turricula scalariformis, T. Woods, figd.; HEDLEY, Rec. Austral. Mus. iii, p. 218.
Volutidae, notes on radula; DALL, Science xii, p. 824: *V. ancilla*, anatomy; WOODWARD (570): *V. scapha*, sinistral; SOWERBY, P. Malac. Soc. London iv, p. 45.
Voluta uniplicata, Japan, p. 439, (*Lyria*) *grangeri*, p. 440, hab. query; SOWERBY, Ann. Nat. Hist. v, figg.: n. spp.
Volutilites abyssicola, anatomy; WOODWARD (570).

FASCIOLARIIDÆ, BUCCINIDÆ, NASSIDÆ, COLUMBELLIDÆ, and MURICIDÆ.

- Buccinum*, radula; TEMPÈRE (523).
Buccinum brucei, Franz-Josef Land; MELVILL & STANDEN, Mem. Manchester Soc. xlii, No. 4, p. 9, fig.: n. sp.
Bullia capensis, Cape of Good Hope; EUTHYME, Bull. Soc. malac. France ii, p. 237 [1885]: n. sp.
Cantharus kingicola, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 91: n. sp.
Chauvetia, n. n. for *Nesaea*, Risso nec Lamarck; MONTEROSATO (584), p. 137.
Columbella nanisca, n. n. for *C. nana*, Dunker nec Michaud; HERVIER, J. Conchyl. xlvi, p. 363 [1899].

- Columbella (Seminella) alicea*, Oran ; PALLARY, J. Conchyl. xlviii, p. 279, fig. : *C. filmerae*, Pondoland, *beckeri*, The Kowie ; SOWERBY, P. Malac. Soc. London iv, p. 3, figg. : n. spp.
- Cyclope westerlundi*, Greece ; BRUSINA, Nachrbl. Deutsch. malak. Ges. 1900, p. 89 : n. sp.
- Donovania feneatrata*, Tasmania ; TATE & MAY, Tr. R. Soc. S. Austral. xiv, p. 94 : n. sp.
- Euthria interrupta*, Japan ; SOWERBY, Ann. Nat. Hist. v, p. 441, fig. : *E. filmerae*, *eburnea*, Pondoland ; SOWERBY, P. Malac. Soc. London iv, p. 1, figg. : n. spp.
- Folinea*, n. sect. for *Buccinum lefebvrii*, Maravigna ; MONTEROSATO (584), p. 136.
- Megalatractus aruanus*, L., note on ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, pp. 98, 508.
- Murex*, notes on some species ; KENYON, P. Malac. Soc. London iv, p. 39.
- Murex marcoensis*, Florida ; SOWERBY, J. Malac. vii, p. 162, fig. : *M. petri*, California ; DALL, Nautilus xiv, p. 37 : n. spp.
- Nassa*, radula ; TEMPÈRE (523).
- Nassa filmerae*, Pondoland ; SOWERBY, P. Malac. Soc. London iv, p. 2, fig. : *N. coralligena*, Oran ; PALLARY, J. Conchyl. xlviii, p. 275, fig. : *N. corrupta*, Monts. MS. Corsica ; LOCARD & CAZIOT, Ann. Soc. Linn. Lyon xlvi, p. 260 : n. spp.
- Nesaea*, Risso, renamed *Chauvetia*, q. v.
- Ocinetra kochiana*, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 126, fig. : n. sp.
- Orania*, n. subgen. of *Murex* for *M. spadix*, Libassi ; PALLARY, J. Conchyl. xlviii, p. 285.
- Pagodula*, n. sect. for *Murex carinatus*, Biv. ; MONTEROSATO (584), p. 116.
- Pardalina*, n. g. of *Columbellidae*, type *C. pardolina* [sic] ; JOUSSEAUME, Mem. Soc. zool. France i, p. 177 [1888].
- Phos chazaliei*, Testigos Is., Santa-Marta ; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 181, fig. : n. sp.
- Poweria*, n. gen. for *Murex scalarinus*, Biv. ; MONTEROSATO (584), p. 113.
- Pseudofusus*, n. sect. for *Murex rostratus*, Olivi, etc. ; MONTEROSATO (584), p. 117.
- Siphonaria pfefferi*, Japan ; SOWERBY, Ann. Nat. Hist. v, p. 440, fig. : n. sp.
- Sistrum nicocheanum*, Argentina ; PILSBRY, Nautilus xiv, p. 3 : n. sp.
- Tritonidea insculpta*, The Kowie ; SOWERBY, P. Malac. Soc. London iv, p. 2, fig. : n. sp.
- Trophon*(?) *insignis*, The Kowie ; SOWERBY, t. c. p. 2, fig. : n. sp.

TÆNIOGLOSSA.

LOTORIIDÆ, CASSIDIIDÆ, DOLIIDÆ, CYPREIDÆ, and STROMBIDÆ.

- Amphiperas beckeri*, Pondoland ; SOWERBY, P. Malac. Soc. London iv, p. 5, fig. : n. sp.
- Cassis booleyi*, Andaman Islands ; SOWERBY, J. Malac. vii, p. 163, fig. : *C. craticulatus*, Cape of Good Hope ; EUTHYME, Bull. Soc. malac. France ii, p. 250 [1885] : n. spp.
- Cypraea kauilani* is probably a var. of *C. helvola* ; ANON, J. Conch. ix, p. 377.
- Cypraea kauilani*, Hawaiian Islands ; KENYON, P. Malac. Soc. London iv, p. 68, fig. : *C. (Trivia) galapagensis*, Galapagos, p. 208, (*T. buttoni*, hab. query, p. 209) ; MELVILL, Ann. Nat. Hist. iv, figg. : n. spp.

- Dolium procellarum*, Cape of Good Hope; EUTHYME, Bull. Soc. malac. France ii, p. 247 [1885]: n. sp.
- Erato denticulata*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 133, fig.: n. sp.
- Gibberulus*, n. g., type *Strombus gibberulus*, Gmel.; JOUSSEAUME, Mem. Soc. zool. France i, p. 174 [1888].
- Lampusia nodocostata*, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 90: n. sp.
- Simpulidae*, proposed to replace *Tritonidae*; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 189.
- Strombus belutschensis*, notes on; SMITH, P. Malac. Soc. London iv, p. 43.
- Trivia acutisulcata*, hab. unknown; KENYON, t. c. p. 69, fig.: n. sp.

CERITHIIDÆ, MODULIDÆ, TRICHOTROPIDIDÆ, TURRITELLIDÆ and CÆCIDÆ.

- Bittium variegatum*, Braz., is a synonym of *Cerithium tenue*, Sby.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 96.
- Coccum tenue, tornatum*, p. 537, *obcurum, delicatulum, debile*, p. 538, *crispum*, p. 539, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, fig.: n. spp.
- Cerithidium*, n. gen. for *Cerithium submammillatum*, Rayn.; MONTEROSATO (584), p. 123.
- Cerithiopsis bermudensis*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 538, fig.: *C. caledonicus*, New Caledonia; EUTHYME, Bull. Soc. malac. France ii, p. 255 [1885]: n. spp.
- Cinctella*, n. gen. for *Cerithium trilineatum*, Phil.; MONTEROSATO (584), p. 123.
- Colpospira*, n. sect. of *Turritella*, type *T. runcinata*, Watson; DONALD, P. Malac. Soc. London iv, p. 51.
- †*Coronaria*, Kittl, renamed *Stephanocosmia*, q. v.
- †*Euthystylus*, n. n. for *Orthostylus*, Kittl nec Beck; COSSMANN (582), p. 63.
- †*Goniogryra*, Kittl, renamed *Goniospira*, q. v.
- †*Goniospira*, n. n. for *Goniogryra*, Kittl nec Agassiz; COSSMANN (582), p. 62.
- †*Heterogyra*, n. gen. for *H. ladina*, n. sp., Trias; KITTL, Ann. Hofmus. Wien xiv, p. 184.
- Metaria*, n. gen. for *Cerithium rugulosum*, Sby.; MONTEROSATO (584), p. 125.
- Modulus guernei*, Cape Verd Is.; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 197, fig.: n. sp.
- †*Orthostylus*, Kittl, renamed *Euthystylus*, q. v.
- Parastilbe*, n. n. for *Stilbe*, Jeffreys nec DeKay; COSSMANN, Rev. paleozool. iv, p. 43.
- Platycolpus*, doubtfully proposed as n. sect. of *Turritella* for *T. quadrata*, n. sp.; DONALD, P. Malac. Soc. London iv, p. 54.
- †*Pustularia*, Koken, renamed *Pustulifer*, q. v.
- †*Pustulifer*, n. n. for *Pustularia*, Koken nec Swainson; COSSMANN (582), p. 65.
- Rhinocoryne*, n. subgen. of *Potamides*, type *P. pacificus*, Sow.; MARTENS, Biol. Centr.-Amer. pp. 567, 574.
- Seila attenuata*, N. S. Wales; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 91, fig.: n. sp.
- Sirius*, n. gen. for *Raulinia badia*, T. Woods; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 88.
- †*Stephanocosmia*, n. n. for *Coronaria*, Kittl nec Fabr.; COSSMANN (582), p. 62.

Stilbe, Jeffreys, renamed *Parastilbe*, q. v.

Thylacodes caperatus, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 94: n. sp.

Turritellidae, on the family, with n. var. of *T. quadrata*; DONALD, P. Malac. Soc. London iv, pp. 47-55: Anatomy of *T. communis* and radula of *T. australis*; RANDLES, t. c. pp. 56-65.

Turritella atkinsoni, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 96: *T. kowieensis*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 6, fig.: *T. (Colpospira, n. sect.) smithiana, crenulata*, off Sydney, p. 53, *godefroyana, quadrata* [*Platycolpus*] doubtfully proposed for this as n. sect., p. 54, Bass Strait, p. 53; DONALD, P. Malac. Soc. London iv, figg. : n. spp.

PSEUDOMELANIIDÆ, MELANIIDÆ, PLEUROCERIDÆ, LITTORINIDÆ, and FOSSARIDÆ.

Brotella, Rovereto, renamed *Paracrostoma*, q.v.

Conchritis, n. subgen. of *Littorina*, type *L. muricata*, Linn.; MARTENS, Biol. Centr.-Amer. pp. 575, 578.

†*Centrogonia*, n. gen. for *C. cureti*, n. sp., Cretaceous, France; COSSMANN, C.R. Ass. France 1899, p. 400.

Couthouya aculeata, Torres Straits; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 89, fig. : n. sp.

Cremnoconchus messageri, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xviii, pp. 116, 449, fig. : n. sp.

†*Eustylus*, Kittl, renamed *Trypanostylus*, q.v.

Fossarus sydneyensis, N. S. Wales; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 89, fig. : n. sp.

Goniobasis plebeia, note on, with fig.; PILSBRY, P. Ac. Philad. 1900, p. 458.

†*Gradilla*, n. subgen. of *Caelostylinea* for *Chemnitzia gradata*, Hoernes, etc., Trias; KITTL, Ann. Hofmus. Wien xiv, p. 146.

Io, variation in; ADAMS, P. Amer. Ass. xlix, p. 208.

Lacuna pectinolus, notes on; BYNE, J. Conch. ix, p. 341.

Lavigera lechapoisii, Ancey, is a variety of *L. nassa*; DAUTZENBERG, J. Conchyl. xviii, p. 81.

Lithania obovata, note on growth of; WALKER, Nautilus xiii, p. 97.

Littorina, radula of; TEILMAN-FRIIS (522): TEMPÈRE (523).

Melania reducta, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xviii, pp. 118, 451, fig.: *M. indragirica*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 10: *M. ponthiervilleensis*, p. xv, *nyang-wencesis, depravata*, p. xvi, *nsendrevensis*, p. xvii, *soror, consobrina*, p. xviii, *kinshassensis*, p. xix, Congo Free State; DUPUIS & PUTZEYS, Ann. Soc. malac. Belgique xxxv, Bull., figg. : n. spp.

†*Mesospira*, n. subg. of *Pseudomelania*, type *Phasianella leymeriei*, d'Arch.; COSSMANN, Bull. Soc. geol. France xxvii, p. 559.

†*Microcilia*, Kittl, renamed *Pseudocochlearia*, q.v.

Micronyassa, n. gen. for *Melania turritispira*, Smith, and others; BOURGUIGNAT, Bull. Soc. malac. France vi, p. 24 [1889].

Nyasella, n. gen. for *N. smithi*, n. sp., and others; BOURGUIGNAT, t. c. p. 17 [1889].

Nyassia, n. gen. for *Melania nodocincta*, Dohrn, and others; BOURGUIGNAT, t. c. p. 5 [1889].

Nyassomelania, n. gen. for *N. leia*, n. sp., and others; BOURGUIGNAT, t. c. p. 30 [1889].

†*Ochatochilus*, n. g., type *O. subvaricosus*, n. sp., from the Bathonian of Saint-Gaultier; COSSMANN, Bull. Soc. geol. France xxvii, p. 556.

- Pachycheilus*, see last year at p. 67.
Paracrostoma, n. n. for *Brotella* (1899) nom. preocc.; COSSMANN, Rev. paleozool. iv, p. 42.
Pleurocera elevatum, note on, with figg.; PILSBRY, P. Ac. Philad. 1900, p. 457.
[†]*Pseudocochlearia*, n. n. for *Microchilus*, Kittl nec Blanch.; COSSMANN (582), p. 64.
Pseudorbis, n. gen. for *Fossarus granulus*, Brugn.; MONTEROSATO (584), p. 109.
[†]*Trypanostylus*, n. n. for *Eustylus*, Kittl nec Schönh.; COSSMANN (582), p. 63.
[†]*Tuberculopleura*, n. g. for *T. kologoræ*, n. sp., and others; JAKOWLEW, Trudui geol. Kom. xv, No. 3, 1899, p. 58.

SOLARIIDÆ, RISSOIDÆ, HYDROBIIDÆ, VIVIPARIDÆ, VALVATIDÆ,
 AMPULLARIIDÆ, and ASSIMINEIDÆ.

- Actonia*, n. sect. of *Alvania* for *Rissoa testæ*, A. & M., etc.; MONTEROSATO (584), p. 61.
Ampullaria brokardi is a monstrosity, and *pagoda* a synonym, of *polita*; SMITH, P. Malac. Soc. London iv, p. 40.
Architectonicidae, proposed to replace *Solariidæ*; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 201.
Assiminea andrewsiiana, Christmas Island; SMITH, Monograph of Christmas Island, p. 59, fig.: n. sp.
Chileutomia, see under *Menon* in *Eulimidae*.
Lithoglyphus tonkinianus, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlvi, pp. 117, 450, fig.: n. sp.
Paludestrina norfolkensis, Norfolk I.; SYKES, P. Malac. Soc. London iv, p. 146, fig.: n. sp.
Petterdiana thaanumi, Queensland; PILSBRY, Nautilus xiii, p. 144: n. sp.
Pomatopsis hirasei, Japan; PILSBRY, op. cit. xiv, p. 12: n. sp.
Pusillina, n. gen. for *Rissoa pusilla*, Phil.; MONTEROSATO (584), p. 56.
Rissoia, radula of; TEILMAN-FRIIS (522): *R. perezigua*, n. n. for *R. minutissima*, Woods nec Michelin; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 100: *R. maccoyi*, T. Woods, *tenisoni*, Tate, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 505.
Rissoa (Manzonia) minuscula, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 540, fig.: *R. (Apicularia) demessa*, p. 98, (*A.*) *apiculirata*, (*Pusillina*) *discrepans*, p. 99, Tasmania, (*Amphithalamus*) *simsoni*, Tasmania and Victoria, (*Cingula*) *rubicunda*, (*Nodulus*) *pellucida*, Tasmania, p. 100; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.
Rissopsis buliminoides, *consobrina*, Tasmania; TATE & MAY, t. c. p. 101: n. spp.
Stenothyra messengeri, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlvi, pp. 116, 448, fig.: n. sp.
Valvata kunkunorica, Nan-shan; STURANY, Denk. Ak. Wien lxx, p. 39, fig.: n. sp.
Vivipara auriculata, of which *V. rusostoma* is a synonym, figd.; SMITH, J. Malac. vii, p. 159.
Vivipara penangensis, Penang; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 18: *V. wingatei*, Hunan; SMITH, J. Malac. vii, p. 158, fig.: n. spp.

CYCLOPHORIDÆ and CYCLOSTOMATIDÆ.

- Acroptychia pyramidalis*, Madagascar; SYKES, J. Malac. vii, p. 165, fig.: n. sp.
- Adelopoma*, note on; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 154.
- Alycaeus requiescens*, Mabille, is a synonym of *A. pilula*, Gld.; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, p. 457.
- Alycaeus (Orthalycaeus) sumatranaus*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 6: *A. (Dioryx) major*, pp. 118, 452, (*D.*) *messageri*, pp. 119, 453, (*D.*) *compactus*, pp. 119, 454, (*D.*) *vanbuenensis*, pp. 120, 455, (*Charax*) *fraterculus*, pp. 120, 457, (*C.*) *heudei*, pp. 121, 458, Tonkin; BAVAY & DAUTZENBERG, J. Conchyl. xlviii, figg.: *A. harenensis*, *reinhardti*, p. 381, *melanopoma*, *hirasei*, p. 382, Japan; PILSBRY, P. Ac. Philad. 1900 : n. spp.
- Charax*, Benson nec Risso, renamed *Dictycharax*, q.v.
- Chondropoma martensianum*, Mexico; PILSBRY, Nautilus xiii, p. 140: n. sp.
- Calopoma*, A. Ad. nec Agassiz, renamed *Spiropoma*, q.v.
- Cyclophorus songmaensis*, Morlet, is, from the type, a synonym of *C. dodrana*, Mabille; DAUTZENBERG, J. Conchyl. xlviii, p. 70.
- Cyclophorus* [appears an *Aperostoma*] underwoodi, Costa Rica; DA COSTA, P. Malac. Soc. London iv, p. 87, fig.: *C. egregius*, p. 4, *pliciferus*, p. 5, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900 : n. spp.
- Cyclostoma elegans*, radula; TEMPÈRE (523).
- Cyclostoma ischuraulaxum*, Italy, Sicily, and Algeria; FAGOT, Bull. Soc. malac. France vi, p. 167 [1889]: n. sp.
- Cyclotus (?) micron*, Japan; PILSBRY, Nautilus xiv, p. 12: n. sp.
- Diadema*, Pease, should be replaced by *Garrettia*, Pease; MOELLENDORFF, J. Malac. vii, p. 118.
- Dictycharax*, n. n. for *Charax*, Bens. nec Risso; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 186.
- Diplommatina pusilla*, n. var.; PILSBRY, P. Ac. Philad. 1900, p. 382.
- Diplommatina belonis*, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 137: *D. oreadicis*, Queensland; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 512, fig.: *D. uzenensis*, Japan; PILSBRY & GULICK, Nautilus xiv, p. 88 : n. spp.
- Gastroptychia*, n. n. for *Paxillus*, Adams nec Michean; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900, p. 186.
- Lagochilus costulatum*, Annam; MOELLENDORFF, t. c. p. 134: n. sp.
- Leptopoma (Trocholeptopoma) annamiticum*, Annam; MOELLENDORFF, t. c. p. 134: *L. (Trocholeptopoma) mitchellæ*, Borneo; SMITH, P. Malac. Soc. London iv, p. 42, fig. : n. spp.
- Metalycæus*, n. sect. of *Alycaeus* for *A. melanopoma*, *hirasei*, n. spp.; PILSBRY, P. Ac. Philad. 1900, p. 382.
- Omphalotropis brenchleyi*, p. 145, *suteri*, p. 146, Norfolk I.; SYKES, P. Malac. Soc. London iv, figg. : n. spp.
- Paratropis*, Btg nec Simon, renamed *Spiratropis*, q.v.
- Parillus*, Adams nec Michean, renamed *Gastroptychia*, q.v.
- Pomatias*, Studer, note on; MARTENS, Nachrbl. Deutsch. malak. Ges. 1891, p. 143.
- Pterocyclus marinii*, Ancey, equals *P. housei*, Haines; DAUTZENBERG, J. Conchyl. xlviii, p. 70.
- Pupina bilobata*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 7 : n. sp.
- Pupinella fruhstorferi*, West Japan; MOELLENDORFF, t. c. p. 110: n. sp.
- Quadraniella ammonitella*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 120: n. sp.

Siphonocyclus, n. sect. of *Procyclotus* for *P. borealis*, Mlldff., and others; *MOELLENDORFF*, Nachrbl. Deutsch. malak. Ges. 1900, p. 136.
Spiraculum assamense, Assam; *FULTON*, Nautilus xiv, p. 87: n. sp.
Spiratropis, n. n. for *Paratropis*, Btg. nec Simon; *KOBELT & MOELLENDORFF*, Nachrbl. Deutsch. malak. Ges. 1900, p. 186.
Spiropoma, n. n. for *Cælopoma*, A. Ad. nec Agassiz; *KOBELT & MOELLENDORFF*, t. c. p. 186.

TRUNCATELLIDÆ.

Blanfordia, note on; *MOELLENDORFF*, Nachrbl. Deutsch. malak. Ges. 1900, p. 153.

CAPULIDÆ, NATICIDÆ, and XENOPHORIDÆ.

Amauropsi moerchi, figd.; *HEDLEY*, P. Linn. Soc. N. S. Wales xxv, p. 94.
Capulus californicus, California; *DALL*, Nautilus xiii, p. 100: n. sp.
Cheilea, Modeer, should be used for group of *Patella equestris*, L.; *DALL*, op. cit. xiv, p. 45.
Natica subcostata, T. Woods, figd.; *PRITCHARD & GATLIFF*, P. Soc. Victoria xiii, p. 132: *N. tenisoni*, n. n. for *N. nana*, Woods nec Möller; *TATE & MAY*, Tr. R. Soc. S. Austral. xxiv, p. 94.
Natica shorehami, Victoria; *PRITCHARD & GATLIFF*, P. Soc. Victoria xiii, p. 131, fig.: *N. labrotincta*, Cebu; *SOWERBY*, P. Malac. Soc. London iv, p. 127, fig.: *N. jousseaumei*, New Caledonia; *EUTHYME*, Bull. Soc. malac. France ii, p. 239 [1886]: n. spp.
Vanikoro gracilis, Braz., is a *Couthouyia*, with fig.; *HEDLEY*, P. Linn. Soc. N. S. Wales xxv, p. 506.
Xenophora, figd.; *CHUN* (87), p. 366.

PTENOGLOSSA.

SCALIDÆ.

Crosseia labiata, T. Woods, figd.; *HEDLEY*, P. Linn. Soc. N. S. Wales xxv, p. 500.
Scala electa, Bermudas; *VERRILL & BUSH*, Tr. Connect. Ac. x, p. 536, fig.: n. sp.
Scalaria (Acilla) minutula, Tasmania, S. Australia, and Victoria; *TATE & MAY*, Tr. R. Soc. S. Austral. xxiv, p. 95: n. sp.

GYMNOGLOSSA.

EULIMIDÆ and PYRAMIDELLIDÆ.

Acicularia, n. sect. for *Eulima beryllina*, Monts., etc.; *MONTEROSATO* (584), p. 102.
Auristomia, n. sect. for *Odostomia erjaveciana*, Brus., etc.; *MONTEROSATO* (584), p. 95.
Brachystomia, n. sect. for *Odostomia rissoides*, Hanley, etc.; *MONTEROSATO* (584), p. 94.
Elusa subulata, A. Ad., figd.; *HEDLEY*, P. Linn. Soc. N. S. Wales xxv, p. 504.
Eulima (Vitreolina) dautzenbergi, Oran; *PALLARY*, J. Conchyl. xviii, p. 339, fig.: *E. hypsela*, *amblytera*, p. 526, *engonia*, *compta*, p. 527, *atypha*, p. 528, Bermudas; *VERRILL & BUSH*, Tr. Connect. Ac. x,

- figg.: *E. inflata*, p. 95, *mayii*, Tate, Tasmania, *tryoni*, p. 96, S. Australia, Victoria, and Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Eulimidae*, monograph completed; CLESSIN in MARTINI & CHEMNITZ (311).
- Jordanella*, n. gen. for *Odostomia nivea*, Mont.; CHASTER, P. Irish Ac. v, p. 20 [1899].
- Leiostraca*, Adams, renamed *Subularia*, q.v.
- Leucotina helvolia*, Queensland; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 510, fig. : n. sp.
- Megastomia*, n. sect. for *Odostomia conspicua*, Alder; MONTEROSATO (584), p. 94.
- Menon*, n. gen. for *M. anceps*, n. sp., N. S. Wales; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 90, fig. : Genus is a synonym of *Chileutomia*; HEDLEY, t. c. p. 506.
- Mucronalia philippinarum*, *cylindrica*, Cebu; SOWERBY, P. Malac. Soc. London iv, p. 127, figg. : n. spp.
- Niso*, monograph by CLESSIN in MARTINI & CHEMNITZ (311).
- Niso balteata*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 6, fig. : n. sp.
- Odontostomia deplexa*, Tasmania, S. Australia, and Victoria, *varians*, p. 97, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Odostomia petterdi*, n. n. for *Obeliscus tasmanica*, Petterd, preocc.; GATLIFF, Victorian Natural. xvii, p. 54.
- Odostomia metcalfei*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 136, fig. : *O. verticalis*, Bantry Bay; MARSHALL, J. Conch. ix, p. 333: *O. jonesii*, p. 531, *lubrixia*, p. 532, (*Cyclodostomia*) *didyma*, (*Eualea*) *somersi*, p. 533, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, figg.: *O. kraussii*, p. 155, *cionelloides*, *curta*, Japan, p. 116, *manilensis*, Manila, p. 118, *hilgendorfi*, Japan, *muelleri*, Brazil, p. 119, *glabra*, Japan, *panamensis*, Panama, p. 120, *sitkaensis*, Sitka, p. 121, *schützei*, p. 123, *flavescens*, Makao, p. 125; CLESSIN in MARTINI & CHEMNITZ (311), figg. : n. spp.
- Parthenia adamsii*, p. 187, n. n. for *P. fenestrata*, A. Adams nec Forbes, monterosatii, p. 188, n. n. for *P. brevicula*, Monterosato nec Jeffreys; CLESSIN in MARTINI & CHEMNITZ (311).
- P. benguelensis*, p. 192, Benguela, Sumatra; CLESSIN in MARTINI & CHEMNITZ (311), fig. : n. sp.
- Pseudorissoides*, n. gen. for *Stylifer tasmanica*, Woods; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 98.
- Pyramidellidae*, monograph commenced; CLESSIN in MARTINI & CHEMNITZ (311).
- Pyrgiulus*, n. sect. for *Odostomia scalaris*, Phil.; MONTEROSATO (584), p. 88.
- Pyrgolidium*, n. sect. for *Odostomia roseum*, Monts.; MONTEROSATO (584), p. 89.
- Pyrgostelia*, n. sect. for *Odostomia rufa*, Phil., etc.; MONTEROSATO (584), p. 89.
- Pyrgostylus*, n. sect. for *Turbonilla striatula* (L.); MONTEROSATO (584), p. 90.
- Scalenostoma striatum*, Queensland and Torres Straits; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 507, fig. : n. sp.
- Spiralina*, n. gen. for *Odostomia spiralis*, Mont.; CHASTER, P. Irish Ac. v, p. 20 [1899].
- Stylifer lodderae*, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 92: *S. petterdi*, n. n. for *S. robusta*, Petterd nec Pease; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 96.
- Stylifer immaculata*, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, p. 137, fig. : n. sp.

- Sebularia*, n. n. for *Liostraca*, Adams, nec *Liostracus*, Albers; MONTEROSATO (584), p. 103.
- Syrnola angasi*, n. n. for *S. gracillima*, Smith nec A. Adams; CLESSIN in MARTINI & CHEMNITZ (311), p. 67: *S. petterdi*, n. n. for *Cebelus tasmanicus*, Woods, nec *S. tasmanica*, Petterd; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 97.
- Syrnola harrisoni*, p. 96, *punctospira*, p. 97, Tasmania; TATE & MAY, t. c.: n. spp.
- Tiberia*, Jeffreys, renamed *Tiberiola*, q.v.
- Tiberiola*, n. n. for *Tiberia*, Jeffreys nec Monterosato; COSSMANN, Rev. paleozool. iv, p. 44.
- Trabecula*, n. sect. for *Odostomia jeffreysiana*, Seguenza; MONTEROSATO (584), p. 86.
- Tragula*, n. sect. for *Odostomia fenestrata*, Forbes; MONTEROSATO (584), p. 86.
- Turbonilla admiranda*, n. n. for *Ella bifasciata*, Woods, preocc.; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 98: *T. kraussi*, n. n. for *T. lactea*, Krauss nec Linn.; CLESSIN in MARTINI & CHEMNITZ (311), p. 135.
- Turbonilla (Ondina) micra*, p. 134, *brevis*, p. 135, Victoria; PRITCHARD & GATLIFF, P. Soc. Victoria xiii, figg.: *T. tincta*, The Kowie; SOWERBY, P. Malac. Soc. London iv, p. 5, fig.: *T. valida*, Bermudas; VERRILL & BSSE, Tr. Connect. Ac. x, p. 528, fig.: *T. malizani*, p. 160, Goree, *puncturata*, Rio Janeiro, fintschi, p. 163, Raluit I., *gracilis*, p. 164, Cuba, *rentzi*, W. Indies, *alta*, p. 165, Japan, *subulata*, Amboina, *martensi*, p. 167, Timor, *striata*, China, *ikeringi*, p. 168, S. Brazil, *portoricensis*, Brazil, *makaensis*, p. 169, China, *chinensis*, p. 170, Makao, *pulchra*, p. 171, Jamaica, *ikeringi*, p. 174, S. Brazil; CLESSIN in MARTINI & CHEMNITZ (311), figg.: n. spp.
- Vitreolina*, n. sect. for *Eulima incurva*, Ren., &c.; MONTEROSATO (584), p. 100.

SCUTIBRANCHIATA.

RHIPIDOGLOSSA.

DESPONIDÆ AND HELICINIDÆ.

- Caloplosma*, n. sect. of *Helicina* for *H. rostrata* and others; CROSSE & FISCHER, Miss. Sci. Mexique, Moll. ii, p. 405 [1893].
- Cherosdespæna*, n. subgen. of *Despana*, type *D. cinnamomea*, n. sp.; SYKES, P. Malac. Soc. London iv, p. 136.
- Despana* (*Cherosdespæna*, n. subgen.) *cinnamomea*, Ecuador; SYKES, t. c. p. 136, fig.: n. sp.
- Georissa japonica*, Japan; PILSBRY, P. Ac. Philad. 1900, p. 384: *G. rufula*, Caroline Islands; MOELLENDORFF, J. Malac. vii, p. 121: *G. chrysacme*, p. 137, *decora*, *exarata*, p. 138, Annam; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1900 : n. spp.
- Helicina sundana*, n. n. for *H. exserta*, Martens nec *exerta*, Pfr.; ANCEY, Nautilus xiv, p. 83.
- Helicina iguapensis*, p. 393, *inæquistrigata*, p. 394, Brazil; PILSBRY, P. Ac. Philad. 1900 : n. spp.
- Linidiella*, n. gen. for *Proserpina swifti*, Blnd.; JOUSSEAU, Mem. Soc. zool. France i, p. 256 [1889; apparently identical with *Cherosdespæna*, q.v.]
- Oxyrhombus*, n. sect. of *Helicina* for *H. ghiesbreghtii* and others; CROSSE & FISCHER, Miss. Sci. Mexique, Moll. ii, p. 399 [1893].

Proserpinacea, notes on ; SYKES, P. Malac. Soc. London iv, pp. 137 & 138.
Pyrgodomus, n. sect. of *Helicina* for *H. chryseis* ; CROSSE & FISCHER, Miss. Sci. Mexique, Moll. ii, p. 440 [1893].

NERITIDÆ, TROCHIDÆ, TURBINIDÆ, AND CYCLOSTREMATIDÆ.

- Callistoma veliei*, Florida ; PILSBRY, Nautilus xiii, p. 128 : n. sp.
Caragolus, n. n. for *Trochocochlea*, auct. nec Klein ; MONTEROSATO (584), p. 43.
Chlorostoma hidalgoi, *orbignyanum*, Patagonia ; PILSBRY, Nautilus xiii, p. 111 : n. spp.
Cyclostrema angelii, T. Woods, figd. ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 503.
Cyclostrema porcellana, Tasmania ; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 101 : *C. cristata*, *dispar*, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 128, figg. : n. spp.
Gibbula (Enida) perspectiva, Pondoland ; SOWERBY, t. c. p. 6, fig. : n. sp.
Leptoptyra viridula, Cebu ; SOWERBY, t. c. p. 128, fig. : n. sp.
Liotia hedleyi, Victoria ; PRITCHARD & GATLIFF, P. Soc. Victoria xii, p. 106, fig. : *L. rostrata*, *philtata*, Queensland ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 502, figg. : n. spp.
Lodderia minima, figd. ; HEDLEY, t. c. p. 94.
Nerita melanotragus, Smith, note on ; HEDLEY, t. c. p. 500.
†*Palaeocollonia*, n. gen. for *P. levigata* (Muñtr.), Trias ; KITTL, Ann. Hofmus. Wien xiv, p. 22.
†*Paratrochus*, n. gen. for *Tectus margine-nodosus*, J. Böhm, Trias ; KITTL, t. c. p. 24.
Petropoma, Gabb, is a synonym of *Leptoptyra* ; H. A. P., Nautilus vii, p. 84 [1893].
Porcupinia, n. n. for *Tharsis*, Jeffreys nec Gieb. ; COSSMANN, Rev. paleozool. iv, p. 43.
Synaptocochele preta, radula ; VERRILL & BUSH, Tr. Connect. Ac. x, p. 525.
Teinostoma orbitum, Torres Straits ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 96, fig. : n. sp.
Thalotia dubia, T. Woods, is a synonym of *T. conica*, Gray ; GATLIFF, Victorian Natural. xvii, p. 113.
Tharsis, Jeffreys, renamed *Porcupinia*, q.v.
Trochus, note on anatomy ; HALLER, Zool. Anz. xxiii, p. 189 : *T. zizyphinus*, radula ; TEMPÈRE (523).
Turbo tricarinulatus, Cape of Good Hope ; EUTHYME, Bull. Soc. malac. France ii, p. 252 [1885] : n. sp.
Vitrinella simplex, Cebu ; SOWERBY, P. Malac. Soc. London iv, p. 128, fig. : n. sp.

HALIOTIDÆ, PLEUROTOMARIIDÆ, and FISSURELLIDÆ.

- †*Codinella*, n. gen. for *Trochus generelli*, Stoppani, Trias ; KITTL, Ann. Hofmus. Wien xiv, p. 15.
Fissurella (Lucapinella) henseli, South Brazil ; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 187.
Fissurella linteae, animal ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 95.
Haliotis, radula ; TEMPÈRE (523) : *H. fulgens*, variety ; STEARNS, P. U. S. Mus. xxii, p. 140.
Lucapinella versicolor, Cape Verd Is. ; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 217, fig. : n. sp.

- Phenacolepas*, catalogue of genus ; PILSBRY, *Nautilus* xiv, pp. 61-63.
Pleurotomaria beyrichii, living specimen ; SCHEDEL, *Nachrbl. Deutsch. malak. Ges.* 1900, p. 18 : *P. saliniana*, note on with figure ; FISCHER, J. Conchyl. xviii, pp. 102 & 103.
Puncturella kesteveni, N. S. Wales ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 499, fig. : n. sp.
Zeidora tasmanica, figd. ; HEDLEY, t. c. p. 93 : *Z. loddona*, n. n. for *Z. tasmanica*, Hedley nec Beddoe ; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 101.

DOCOGLOSSA.

Hermaphroditism ; WILCOX, Science xii, p. 230.

ACMÆIDÆ and PATELLIDÆ.

- Aconia testudinalis*, anatomy ; WILCOX, Science xi, p. 171.
 †*Acrovia*, n. gen. for *Nacella baylei*, Coss., Tertiary ; COSSMANN (579), p. 131.
Bathyosciadium conicum, n. gen. and sp., Azores, forms also n. fam. *Bathyosciadidae* ; DAUTZENBERG & FISCHER, Bull. Soc. zool. France xxiv, p. 207, fig. : Note on anatomy ; PELESENEER, t. c. p. 209 : Note on ; DALL, Science xi, p. 914 : Is a synonym of *Lepeta costulata*, Loc., but the genus is new ; DAUTZENBERG & FISCHER, J. Conchyl. xviii, p. 460.
Helcion pellucidus and *H. cornutus*, habits and differences ; MARTEL (298).
Nacella parva var. *tasmanica* is a species ; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 102.
Patella, radula ; TEMPÈRE (523).
 †*Randomia*, n. gen., type *R. aurora*, n. sp., Etcheminian ; MATTHEW, Bull. Soc. N. Brunswick iv, p. 190.

III. SCAPHOPODA.

- Cadulus laevis*, Braz., figd. ; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 499.
Cadulus (Gadilia) spretus, Tasmania ; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 102 : n. sp.
Dentalium dollfusi, COSSMANN [1899], is a synonym of *D. inequicostatum*, Dautz ; COSSMANN, Rev. paleozool. iv, p. 186.
Pseudodalalis, n. gen. for *Dentalium rubescens*, Desh. ; MONTEROSATO (584), p. 32.

IV. PELECYPODA.

On the 'eyes' in some Pelecypoda ; HESSE (223).
 Many critical notes with new subgenera and sections ; DALL (121).

SEPTIBRANCHIATA.

[None.]

EULAMELLIBRANCHIATA.

ANATINACEA.

Alicia, Angas, renamed *Thraciopsis*, q.v.†*Endomargarus*, n. gen., type *Lyonsia heberti*, Desh.; COSSMANN (580), p. 58.*Thraciopsis*, n. n. for *Alicia*, Angas nec Johnson; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 103.

PHOLADACEA.

[None.]

MYACEA and CARDIACEA.

†*Acrosterigma*, n. sect. of *Trachycardium*, type *C. dalli*, Heilprin; DALL, Tr. Wagner Inst. iii, p. 1073. [Also in P. U. S. Mus. xxiii, p. 383.]*Cardiida*, synopsis of family; DALL (123).†*Cuneocorbula*, n. sect. of *Corbula*, first species *C. biangulata*, Desh.; COSSMANN (580), p. 49.*Dinocardium*, n. sect. of *Cerastoderma*, type *Cardium magnum*, Born; DALL, Tr. Wagner Inst. iii, p. 1074. [Also in P. U. S. Mus. xxiii, p. 384.]†*Divaricardium*, n. gen. for *Cardium discrepans*, Bast.; DOLLFUS & DAUTZENBERG, Feuille Natural. 1886, p. 95 [1886].†*Fabagella*, n. gen., type *Corbula faba*, Desh.; COSSMANN (580), p. 53.*Hemicardium tegulatum*, hab. unknown; DAUTZENBERG, J. Conchyl. xlvi, p. 5, fig.: n. sp.†*Loxocardium*, n. sect. of *Cardium*, first species *C. formosum*, Desh.; COSSMANN (580), p. 172.†*Necroporomya*, n. gen. for *Corbula argentea*, Lam.; COSSMANN (580), p. 58.*Particardium*, n. sect. of *Cardium* for *C. parvum*, Phil., etc.; MONTEROSATO (584), p. 19.†*Plagiocardium*, n. sect. of *Cardium*, first species *C. granulosum*, Lam.; COSSMANN (580), p. 168.*Trigoniocardia*, n. sect. of *Fragum*, type *Cardium graniferum*, Sby.; DALL, Tr. Wagner Inst. iii, p. 1075. [Also in P. U. S. Mus. xxiii, p. 384.]

VENERACEA and TELLINACEA.

Aeretica, n. sect. of *Strigilla*, type *S. senegalensis*, Hanley; DALL, Tr. Wagner Inst. iii, p. 1038.†*Arcopagiopsis*, n. sect. of *Tellina*, first species *T. pustula*, Desh.; COSSMANN (580), p. 81.†*Asaphinella*, n. gen., type *Caprea minima*, Desh.; COSSMANN (580), p. 97.†*Atopodonta*, n. gen., first species *Venus coniformis*, Desh.; COSSMANN (580), p. 110.†*Callistotapes*, n. subgen. of *Tapes*, type *Venus vetula*, Bast.; SACCO (452), p. 52.†*Chiunella*, n. sect. of *Cytherea*, first species *C. ovalina*, Desh.; COSSMANN (580), p. 117.

- Circenita*, n. gen. of *Veneridae*, type *Venus arabica*, Chem.; JOUSSEAUME, Mem. Soc. zool. France i, p. 208 [1888].
- †*Cyclotellina*, n. sect. of *Tellina*, type *T. lunulata*, Lam.; COSSMANN (580), p. 79.
- Cydiippina*, n. sect. of *Psammacoma* (q.v.), type *Macoma brevifrons*, Say; DALL, P. U. S. Mus. xxiii, p. 292.
- Cymatoica*, n. subgen. of *Macoma* for two n. spp.; DALL, op. cit. xii, p. 272 [1890].
- †*Dolifuria*, n. gen. for *D. crassa*, n. sp.; COSSMANN (580), p. 128.
- †*Elliptotellina*, n. sect. of *Tellina*, type *T. tellinella*, Lamk.; COSSMANN (580), p. 70.
- Eutapes*, apparently n. sect. of *Venus* for *V. rhomboides*, Penn.; CHIAMMENTI, Riv. Ital. Sci. Nat. xx, p. 11.
- †*Garum*, n. sect. of *Psammobia*, type *P. dumtemplei*, Desh.; DALL, Tr. Wagner Inst. iii, p. 975.
- Gastranella tumida*, occurrence of; WINKLEY, Nautilus xiv, p. 93: Is neopionic stage of *Petricola*; DALL, Tr. Wagner Inst. iii, p. 1057.
- Grammatodonax*, n. sect. of *Donax* for *D. madagascariensis*, Lam.; DALL, t. c. p. 963.
- Grammatomya*, n. sect. of *Psammobia*, type *P. squamosa*, Lamk.; DALL, P. Ac. Philad. 1898, p. 57. [Dated 1897, but really 1898.]
- Labiosa meridionalis*, figd.; HEDLEY, P. Linn. Soc. N. S. Wales xxv, p. 497.
- Lutricularia*, n. sect. [of *Scrobicularia*] for *Erycina ovata*, Phil., etc.; MONTEROSATO (584), p. 28.
- †*Macaliopsis*, n. sect. of *Tellina*, first species *T. barrandei*, Desh.; COSSMANN (580), p. 75.
- Macoma phenax*, Virginia and Florida, (*Psammacoma*) *extenuata*, Florida, p. 314, (*P.*) *tagelliformis*, Texas, p. 315, *krausei*, Bering Strait, p. 322, *sitkana*, *alaskana*, Alaska, p. 323, (*indentata* var.?) *tenuirostris*, California, *panamensis*, Panama Bay, p. 324; DALL, P. U. S. Mus. xxiii, figg.: n. spp.
- Merica*, n. sect. of *Arcopagia* for *Tellina aequistriata*, Say., and others; DALL, Tr. Wagner Inst. iii, p. 1012. [Also in P. U. S. Mus. xxiii, p. 290.]
- †*Myropsais*, n. subgen. of *Tapes*, type *Venerupis pernarum*, Bonelli; SACCO (452), p. 57.
- Nuttallia*, n. sect. of *Sanguinolaria*, type *S. nuttalli*, Conrad; DALL, Tr. Wagner Inst. iii, p. 979.
- Oudardia*, n. sect. of *Tellina* for *T. oudardi*, Payr.; MONTEROSATO (584), p. 22.
- †*Parivenus*, n. subgen. of *Venus*, type *Venus marginatus*, Hoernes; SACCO (452), p. 45.
- Peronea*, Murch, renamed *Peroniaria*, q.v.
- Peroniaria*, n. n. for *Peronea*, Murch, nec *Peronea*, Curtis; DALL, Tr. Wagner Inst. iii, p. 1014. [Also in P. U. S. Mus. xxiii, p. 291.]
- Petricola denticulata*, note on species, of which *Peophis tellimyalis*, Cptr., is a synonym; DALL, Nautilus xiii, p. 121.
- Phyllodina*, n. sect. of *Arcopagia*, type *Tellina squamifera*, Desh.; DALL, Tr. Wagner Inst. iii, p. 1012. [Also in P. U. S. Mus. xxiii, p. 290.]
- Platydona*, n. sect. of *Donax* for *D. finchi*, Sby.; DALL, t. c. p. 963.
- Polititapes*, apparently n. sect. of *Venus* for *Venus aurea*, Gmel.; CHIAMMENTI, Riv. Ital. Sci. Nat. xx, p. 11.
- Psammacoma*, n. subgen. of *Macoma*, type *Tellina candida*, Lam.; DALL, Tr. Wagner Inst. iii, p. 1045. [Also in P. U. S. Mus. xxiii, p. 292.]
- †*Psammodonax*, n. gen., type *Psammobia caillati*, Desh.; COSSMANN (580), p. 96.
- †*Psammoica*, n. sect. of *Psammobia*, type *P. appendiculata*, Desh.; DALL, Tr. Wagner Inst. iii, p. 975.

- [†]*Psammotena*, n. sect. of *Psammobia*, type *P. effusa*, Lam.: DALL, t. c. p. 976.
Psammotreta, n. sect. of *Psammacoma* (n. subgen., q.v.), type *Macoma aurora*, Hanley; DALL, t. c. p. 1045. [Also in P. U. S. Mus. xxiii, p. 292.]
Rombergia, n. sect. of *Strigilla*, type *S. rombergi*, Mörch, DALL, t. c. p. 1038.
Ruditapes, apparently n. sect. of *Venus* for *V. decussata*, L.; CHIAMENTI, Riv. Ital. Sci. Nat. xx, p. 13.
Tapes pullastris is distinct from *T. geographicus*; WOODWARD, J. Conch. ix, p. 365.
Scissula, n. sect. of *Angulus*, type *Tellina decora*, Say; DALL, Tr. Wagner Inst. iii, p. 1014. [Also in P. U. S. Mus. xxiii, p. 291.]
Scrobiculina, n. sect. of *Arco pagia*, type *Scrobicularia viridotincta*, Cptr.; DALL, t. c. p. 1013. [Also in P. U. S. Mus. xxiii, p. 290.]
Semele, n. sect. of *Semele*, type *S. nuculoides*, Conrad; DALL, t. c. p. 986.
[†]*Tauropates*, n. subgen. of *Tapes*, type *Venus craverii*, Micht.; SACCO (452) p. 58.
Tellina (*Tellinella*) *versluysi*, Santa Marta; DAUTZENBERG, Mem. Soc. zool. France xiii, p. 259, fig.: *T. (Eurytellina?) georgiana*, Gulf of Mexico and St Thomas, p. 310, (*Liotellina*) *iheringi*, Rio la Plata, (*Elliptotellina*) *americana*, North Carolina, p. 311, (*Angulus*) *promera*, Bermuda, (*A.*) *flagellum*, Brazil, p. 312, (*A.*) *colorata*, Guadeloupe, (*A.*) *texana*, Texas and Florida, p. 313, (*Merisca*) *reducta*, Lower California, p. 315, (*Elliptotellina*) *pacifica*, Panama Bay, (*Phyllodina*) *pristiphora*, Lower California, p. 316, (*Eurytellina*) *leucogonia*, (*Moerella*) *meropis*, (*M.*) *amianta*, p. 317, (*M.*) *paziana*, California, (*Angulus*) *maclellani*, Mexico, p. 318, (*A.*) *suffusa*, (*A.*) *cerrosiana*, Lower California, (*A.*) *panamensis*, Panama Bay, p. 319, (*A.*) *recurva*, p. 320, (*Peronidia*) *santarosa*, p. 321, California; DALL, P. U. S. Mus. xxiii, figg. : n. spp.
Tellinida, synopsis of family with several species figd.; DALL (122): On cruciform muscle; HERING (240): *T. carpenteri*, n. n. for *Angulus variegatus*, Cptr., nec *Tellina variegata*, Gmel., *buttoni*, n. n. for *Angulus modestus*, auct. nec Sby.; DALL, P. U. S. Mus. xxiii, p. 320.
[†]*Textivenus*, n. sect. of *Venus*, first species *V. texta*, Lam.; COSSMANN (580), p. 109.
[†]*Tivelina*, n. sect. of *Cytherea*, first species *C. tellinaria*, Dufour; COSSMANN (580), p. 119.
[†]*Venerella*, n. sect. of *Venus*, first species *V. hermonvillensis*, Desh.; COSSMANN (580), p. 106.
[†]*Veneritapes*, n. gen. for *Psammobia bervillei*, Desh.; COSSMANN (580), p. 104.

SUBMYTILACEA.

- Actinonaias*, n. sect. of *Unio* for *U. sapotalensis*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
Acuticosta, n. subgen. of *Parreysia*, type *Unio chinensis*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 850.
Amphinaias, n. sect. of *Unio* for *U. couchianus*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
Amygdalonaias, n. sect. of *Unio* for *U. cognatus*, Lea; CROSSE & FISCHER, t. c. p. 557 [1894].
[†]*Angusticardo*, n. sect. of *Sportella*, first species *S. rotundata*, Desh.; COSSMANN (581), p. 13.
Anodonta cygnea, varieties with new names; BUCHNER, Jahresh. Ver. Wurttemb. lvi, pp. 60-223: *A. cygnea*, monstrosities; BLOOM J. Malac. vii, pp. 136 & 177.

- Anodonta expressa*, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900, p. 12; *A. richardsoni*, p. 529, N.W. Mexico, *depeza*, p. 538, W. Guatemala; MARTENS, Biol. Centr.-Amer. figg.: *A. bythia*, p. 211, *schroederi*, p. 212, *potimia*, p. 214, *richardi*, p. 215, *perlora*, p. 217, *tricassinaformis*, p. 218, *rhynconella*, p. 219, *journeopsis*, p. 222, Germany; SCHRÖDER (585): *A. josei*, p. 278, *enhydra*, p. 279, *tuberculata*, p. 281, *tumidiformis*, p. 283, *sadoicus*, p. 284, *macropygus*, p. 286, *eupygus*, p. 287, *hyperephanus*, p. 289, *nevesi*, p. 290, *simoesi*, p. 292, Portugal; CASTRO, Bull. Soc. malac. France ii [1885]: *A. epidedaca*, p. 335, *eupelina*, p. 336, *calara*, p. 337, *euacata*, p. 338, *fæda*, p. 340, *immunda*, p. 341, *misara*, p. 343, *rayopsis*, p. 344, *duregica*, p. 346, *tigurica*, p. 348, *ruvidella*, p. 349, *hypaschra*, p. 351, Lake of Zurich; SERVAIN, t. c. [1885]: n. spp.
- +*Anomalokellia*, n. sect. of *Kellia*, type *K. catalaunensis*, Cossman.; COSSMANN (581), p. 71.
- Aplodon*, Spix, renamed *Spixoconcha*, q.v.
- Arcidens*, n. gen., type *Alasmodontia confragosa*, Say; SIMPSON, P. U. S. Mus. xxii, p. 661.
- Arcidopsis*, n. gen., type *Unio footei*, Theobald; SIMPSON, t. c. p. 861.
- Artonaias*, n. subgen. of *Unio*, for *U. cyrenoides*, Phil., etc.; MARTENS, Biol. Centr.-Amer. pp. 480, 497.
- Astarte sulcata*, shells with crenulated margins belong to females, those with smooth edges to males; OSTROUMOFF (368).
- Aurora*, n. subgen. of *Parreysia*, type *Unio auroreus*, Heude; SIMPSON, P. U. S. Mus. xxii, p. 849.
- Barynaias*, n. sect. of *Unio* for *U. pigerrimus*, C. & F.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- +*Bernayia*, n. gen., first species *B. subarata*, n. sp., Eocene; COSSMANN (581), p. 16.
- Bineurus*, n. sect. of *Pseudodon*, type *Monocondylaea mouhoti*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 839.
- Bullella*, n. subgen. of *Alasmidonta*, type *Margaritana arcula*, Lea; SIMPSON, t. c. p. 672.
- Bulloideus*, n. sect. of *Diplodon*, type *Unio bulloides*, Lea; SIMPSON, t. c. p. 887.
- Cenonaias*, n. sect. of *Unio* for *U. arruginosus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- Cafferia*, n. sect. of *Nodularia*, type *Unio caffer*, Krauss; STIMPSON, P. U. S. Mus. xxii, p. 824.
- Calocardia* is equivalent to *Caryatis*; SMITH, P. Malac. Soc. London iv, p. 81.
- Callonaia*, n. gen., type *Castalia duprei*, Recluz; SIMPSON, P. U. S. Mus. xxii, p. 867.
- Carditella delta*, p. 102, *pectinata*, p. 103, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Castaliella*, n. gen., type *Castalia sulcata*, Krauss; SIMPSON, P. U. S. Mus. xxii, p. 866.
- Caudiculatus*, n. subgen. of *Hyriopsis*, type *Unio caudiculatus*, Martens; SIMPSON, t. c. p. 581.
- Chamberlainia*, n. gen., type *Unio hainesianus*, Lea; SIMPSON, t. c. p. 582.
- Corbicula obrutschewi*, methoria, Tschi-Li; STURANY, Denk. Ak. Wien lxx, p. 39, fig.; *C. gustaviana*, p. 17, *tobae*, p. 18, Sumatra; MARTENS, Nachrbl. Deutsch. malak. Ges. 1900 : n. spp.
- Corunculina*, n. sect. of *Lampsilis* for *Unio parvus*, Barnes, and others; SIMPSON in BAKER, Bull. Chicago Ac. iii, p. 109 [1898]: should be *Carunculina*; SIMPSON, P. U. S. Mus. xxii, p. 563.
- Crassitesta*, n. subgen. of *Cristaria*, type *Cristaria radiata*, Simpson [n. n. for *Dipsas parvulus*, Heude, pars]; SIMPSON, t. c. p. 586.

- Ctenoderma*, n. gen., type *Unio borneensis*, Issel; SIMPSON, t. c. p. 852.
Cuneopsis, n. gen., type *Unio celtiformis*, Heude; SIMPSON, t. c. p. 804.
Cyamium mactroides, Tasmania; TATE & MAY, Tr. R. Soc. S. Austral. xxiv, p. 102: n. sp.
Cyclonyxa, n. subgen. of *Diploodon*, type *Unio funebralis*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 885.
Cylindrica, n. sect. of *Nodularia*, type *N. cylindrica*, Simpson; SIMPSON, t. c. p. 807.
Cyrena ingens, New Hebrides; DAUTZENBERG, J. Conchyl. xlvi, p. 105, fig.: n. sp.
Cyrtonaia, n. sect. of *Unio* for *U. berlandieri*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
 †*Cytherocardia*, n. subgen. of *Isocardia*, type *I. cytheroides*, Mayer; SACCO (452), p. 5.
Dallidella, n. gen., type *Anodonta purpurea*, Val.; SIMPSON, P. U. S. Mus. xxii, p. 832.
Delphinonaias, n. sect. of *Unio* for *U. delphinulus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 555 [1894].
Diplodon wagnerianum, n. n. for *Unio ellipticus*, Wagner nec Barnes, p. 877, *cuprinus*, n. n. for *fragilis*, Sby., preocc., *aureus*, n. n. for *auratus*, Kuster nec Phil., p. 883; SIMPSON, P. U. S. Mus. xxii.
Diplodonta (Phlyctiderma) puncturella, Jamaica; DALL, Tr. Wagner Inst. iii, p. 1183, fig.: n. sp.
Discomya, n. subgen. of *Quadrula*, type *Unio radulosus*, Drouet & Chaper; SIMPSON, P. U. S. Mus. xxii, p. 802.
Disconaias, n. sect. of *Unio* for *U. discus*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
 †*Divarikelia*, n. sect. of *Kellia*, type *K. nitida*, Caillat; COSSMANN (581), p. 67.
Dreissensia polymorpha with pearl; BLADEN (48).
Dromus, n. gen., type *Unio dromus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 614.
Eupera pittieri, S.W. Costa Rica; MARTENS, Biol. Centr.-Amer. p. 553, fig.: n. sp.
 †*Fulcrella*, n. subgen. of *Anisodonta*, type *Poromya paradoxa*, Desh.; COSSMANN (580), pp. 149, 153.
Fusconaias, n. sect. of *Quadrula*, type *Unio trigonus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 784.
Gibbonsia, n. gen., type *Mya crassa*, Wood; SIMPSON, t. c. p. 804.
Glabaris philippianus, n. n. for *Anodonta subsinuata*, Phil. nec Sby., p. 919, *umbonatus*, n. n. for *Anodon ciconia*, Sby., pars, p. 926; SIMPSON, t. c.
Glabaris falcus, Orinoco River; SIMPSON, t. c. p. 932: n. sp.
 †*Gosvensia*, n. gen. for *G. plicatuloides*, n. sp., Tertiary; COSSMANN (679), p. 113.
Grandidieria, n. gen. of *Unionidae*, with several n. spp., Lake Tanganyika; BOURGUIGNAT, Bull. Soc. malac. France ii, p. 1 [1885].
Graphonaias, n. sect. of *Unio* for *U. medellinus*, Lea; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
Hyriana, n. subgen. of *Hyria*, type *Unio ortonii*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 872.
Hyriopeis bivalvatus, n. n. for *Unio delphinus*, Gruner nec Spengler; SIMPSON, t. c. p. 579.
Iheringella, n. n. for *Plagiodon*, Lea nec Dumeril; PILSBRY, Nautilus vii, p. 30 [1893].
Laxirostris, n. subgen. of *Diploodon*, type *Unio stagnorum*, Dautz; SIMPSON, P. U. S. Mus. xxii, p. 894.

- Lamellidens*, n. gen., type *Unio marginalis*, Lam.; SIMPSON, t. c. p. 854:
L. canefrianus, n. n. for *Unio protensus*, T. Canefri nec Lea; SIMPSON,
t. c. p. 857.
- Lamprotula*, n. subgen. of *Quadrula*, type *Chama plumbea*, Chemn.;
SIMPSON, t. c. p. 796.
- Lampsilis binominatus*, n. n. for *Unio lineatus*, Lea nec Val., p. 528,
lividus, n. n. for *Unio testudineus*, Rve. nec Morel, p. 571; SIMPSON,
t. c.: *L. brittsi* is a var. of *L. breviculus*; SIMPSON, t. c. p. 533.
- Lampsilis simpsoni*, Arkansas; FERRISS, Nutilus xiv, p. 38: *L. fal-
lacious* (Smith), Mississippi, p. 74, *australis*, Alabama, *mearnsi*,
Texas, p. 75, *brittsi*, loc. not stated; SIMPSON, P. Ac. Philad. 1900,
figg. : n. spp.
- Lapidosus*, n. sect. of *Unio*, type *U. lapidosus*, Kob.; SIMPSON, P. U. S.
Mus. xxii, p. 700.
- Lasaea bermudensis* is a synonym of *L. rubra*; DALL, Tr. Wagner Inst. iii,
p. 1164.
- †*Laubriereia*, n. gen., type *Erycina emarginata*, Desh.; COSSMANN (580),
p. 72.
- Leguminaria locardi*, n. n. for *Pseudodon chantrei*, Locard, preocc.; SIMPSON,
P. U. S. Mus. xxii, p. 653.
- Lens*, n. sect. of *Physunio* (q.v.), type *Unio eximus*, Lea; SIMPSON, t. c.
p. 831.
- Leptonaias*, n. sect. of *Unio* for *U. ravistellus*, Morel.; CROSSE & FISCHER,
Miss. Sci. Mexique ii, p. 557 [1894].
- Lucina lux*, Bermudas; VERRILL & BUSH, Tr. Connect. Ac. x, p. 518, fig.;
n. sp.
- †*Ludovicia* (Desh. MS.), n. gen. for *L. squamula*, n. sp., Eocene; COSSMANN
(581), p. 45.
- Medionidus*, n. gen. for *Unio walkeri*; SIMPSON, P. Ac. Philad. 1900, p. 77:
Also in P. U. S. Mus. xxii, p. 588 [with type *U. conradicus*, Lea].
- Mesonaias*, n. sect. of *Unio* for *U. explicatus*, Morel.; CROSSE & FISCHER,
Miss. Sci. Mexique ii, p. 556 [1894].
- Micronaias*, n. sect. of *Unio*, type *U. aratus*, Lea; SIMPSON, P. U. S. Mus.
xxii, p. 743.
- Mylietta inaequalis*, Dall, is a synonym of *M. gemmata*, Tate; HEDLEY,
P. Linn. Soc. N. S. Wales xxv, p. 497.
- Nasus*, n. sect. of *Pseudodon*, type *P. nankinensis*, Heude; SIMPSON,
P. U. S. Mus. xxii, p. 839.
- Neolepton*, n. gen. for *Lepton sulcatulum*, Jeff., etc.; MONTEROSATO (584),
p. 15.
- Nephronaias*, n. sect. of *Unio* for *U. plicatulus*, Charp.; CROSSE & FISCHER,
Miss. Sci. Mexique ii, p. 556 [1894].
- Nephronaias reticulatus*, Honduras; SIMPSON, P. Ac. Philad. 1900, p. 77,
fig.: n. sp.
- Nodularia lima*, n. n. for *Unio radula*, Bens. nec Say, p. 820, *jickeli*, n. n.
for *Unio teretiusculus*, Jickeli nec Phil., p. 826; SIMPSON, P. U. S.
Mus. xxii.
- Nodularia cylindracea*, China; SIMPSON, P. Ac. Philad. 1900, p. 84, fig.:
n. sp.
- Obovalis*, n. sect. of *Pseudodon*, type *P. loomisi*, Simpson; SIMPSON,
P. U. S. Mus. xxii, p. 840.
- Orobittella*, n. sect. of *Montacuta*, type *M. floridana*, Dall; DALL, Tr.
Wagner Inst. iii, pp. 1119, 1170.
- Pachyanodon*, n. subgen. of *Anodonta* for *A. luteola*, Lea, etc.; MARTENS,
Biol. Centr.-Amer. pp. 525, 537.
- Pachynaias*, n. sect. of *Unio* for *U. spheniopsis*, Morel.; CROSSE & FISCHER,
Miss. Sci. Mexique ii, p. 556 [1894].
- †*Parisiella*, n. gen. for *P. ambigua*, Eocene; COSSMANN (581), p. 103.

- Pegias*, n. gen., type *Margaritana fabula*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 660.
- *Phyllonaias*, n. sect. of *Unio* for *U. paludosus*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 555 [1894].
- Phynnio*, n. gen., type *Unio gravidus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 830.
- Pilea*, n. subgen. of *Truncilla*, type *Unio personatus*, Say; SIMPSON, t. c. p. 522.
- Pilsbryoconcha*, n. gen. for *Anodonta exilia*, Lea; SIMPSON, t. c. p. 587.
- Pinidium cleopatrae*, Switzerland; SURBECK, Mt. Ges. Luzern iii, p. 482, fig.: *P. boliviense*, Bolivia; STURANY, Nachrbl. Deutsch. malak. Ges. 1900, p. 57, fig.: *P. imbecille*, Michigan, *peraltum*, Michigan, Illinois, Iowa, and Kentucky, p. 5; STERKI, Nautilus xiv : n. spp.
- Plagiodon*, Lea, renamed *Iheringella*, q.v.
- †*Planitellia*, n. sect. of *Kellia*, type *K. radiolata*, Lamk.; COSSMANN (681), p. 69.
- Plethobasus*, n. sect. of *Pleurobema*, type *Unio asopus*, Green; SIMPSON, P. U. S. Mus. xxii, p. 764.
- Pletholophus*, n. subgen. of *Cristaria*, type *Sympnonta discoidea*, Lea; SIMPSON, t. c. p. 585.
- Pleurobema avellana*, p. 81, *patsaligensis*, p. 82, Alabama; SIMPSON, P. Ac. Philad. 1900, figg. : n. spp.
- Pressodontia*, n. subgen. of *Alasmidonta*, type *Unio calceolus*, Lea; SIMPSON, P. U. S. Mus. xxii, p. 667.
- Pseudaricula*, n. gen., type *Unio johnstoni*, Smith; SIMPSON, t. c. p. 860.
- Pseudobaphia*, n. subgen. of *Parreysia*, type *Unio brenanii*, Heude; SIMPSON, t. c. p. 849.
- Pseudodon loomisi*, Japan; SIMPSON, P. Ac. Philad. 1900, p. 84, fig.: n. sp.
- Pseudomutela*, n. subgen. of *Mutela*, type *Mycetopus plicatus*, Sby.; SIMPSON, P. U. S. Mus. xxii, p. 905.
- Pseudodon*, n. subgen. of *Obovaria*, type *Unio ellipeis*, Lea; SIMPSON, t. c. p. 801.
- Pseudospatha*, n. gen. for *Spatha tanganyicensis*, Smith; SIMPSON, t. c. p. 577.
- Pteronaias*, n. sect. of *Unio* for *U. peorius*, Morel.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 556 [1894].
- Ptychobranchus*, n. gen. for *Unio phaseolus*, Hildreth; SIMPSON, P. Ac. Philad. 1900, p. 79: Also in P. U. S. Mus. xxii, p. 612.
- Ptychobranchus clintonensis*, Arkansas; SIMPSON, P. Ac. Philad. 1900, p. 79, fig.: n. sp.
- Ptychoderma*, n. subgen. of *Plagiola*, type *Unio cyrenoides*, Phil.; SIMPSON, P. U. S. Mus. xxii, p. 606.
- Ptychorhyncus*, n. gen., type *Unio pfisteri*, Heude; SIMPSON, t. c. p. 850.
- Ptychorhynchus incertus*, n. n. for *Unio compressus*, Heude, preocc.; SIMPSON, t. c. p. 851.
- Quadrula kouangensis*, n. n. for *Unio moreletianus*, Heude, preocc., *similaris*, n. n. for *U. affinis*, Heude nec Lea, p. 799, *ovata*, n. n. for *U. ventitus*, Heude, para, p. 801; SIMPSON, t. c.
- Quadrula guatemalensis*, Guatemala, *flexuosa*, Tennessee; SIMPSON, P. Ac. Philad. 1900, p. 83, figg. : n. spp.
- Radiatula*, apparently n. sect. of *Nodularia*, type *Unio crispulatus*, Bens.; SIMPSON, P. U. S. Mus. xxii, p. 820.
- Rectidens*, n. gen., type *Unio prolongatus*, Drouet; SIMPSON, t. c. p. 853.
- Rugifera*, n. subgen. of *Alasmidonta*, type *Alasmidonta marginata*, Say; SIMPSON, t. c. p. 670.
- Scolianodon*, n. subgen. of *Anodonta*, for *A. inquisitorialis*, Lea MARTENS, Biol. Centr.-Amer. pp. 525, 534.

- Shistodesmus*, n. gen., type *Unio lampreyanus*, Baird & Adams; SIMPSON, P. U. S. Mus. xxii, p. 803: *S. spinosus*, n. n. for *Unio vestitus*, Heude, pars; SIMPSON, t. c. p. 804.
- Simonaias*, n. sect. of *Unio* for *U. tabascoensis*, Charp.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- Spatha lacustris*, n. n. for *anceyi*, Brtg., 1894 nec 1885; SIMPSON, P. U. S. Mus. xxii, p. 898.
- Spathopsis*, n. subgen. of *Lamellidens* (q.v.), type *Anodonta guillainii*, Recluz; SIMPSON, t. c. p. 857.
- Spherium luridum*, N.W. Mexico, *costaricanum*, p. 552, Central Costa Rica; MARTENS, Biol. Centr.-Amer. figg. : n. spp.
- Sphenonaias*, n. sect. of *Unio* for *U. liebmanni*, Phil.; CROSSE & FISCHER, Miss. Sci. Mexique ii, p. 557 [1894].
- Spiroconcha*, n. n. for *Aplodon*, Spix nec Rafinesque; PILSBRY, Nautilus vii, p. 30 [1893].
- †*Stutchburia*, n. gen. for *Orthonota costata*, Morris; ETHERIDGE, Rec. Austral. Mus. iii, p. 178.
- Styanodon*, n. subgen. of *Anodonta*, type *A. tenebricosa*, Lea; MARTENS, Biol. Centr.-Amer. p. 525.
- Suborbicularis*, n. sect. of *Pseudodon*, type *Monocondylus orbicularis*, Morel; SIMPSON, P. U. S. Mus. xxii, p. 835.
- Trapezoideus*, n. gen., type *Unio foliacea*, Gould; SIMPSON, t. c. p. 858: *T. peninsularis*, n. n. for *Unio sumatrensis*, Sby. nec Lea; SIMPSON, t. c. p. 859.
- Triquetraea*, n. subgen. of *Hyria*, type *Unio stvensi*, Lea; SIMPSON, t. c. p. 869.
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VIII. BRACHIOPODA.

BY

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ASSISTED BY

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IX. BRYOZOA.

BY

ARTHUR WILLEY, D.Sc.

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(Including GIGANTOSTRACA.)

BY

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INTRODUCTION.

THE RECORD of CRUSTACEA for 1900 is in every way larger than its immediate predecessors. Moreover the publications of the year are of considerable interest and importance and show that no decline is likely to take place in the energy with which the Class is studied. The largest Monograph of the year is EDWARDS & BOUVIER's beautiful volume on the *Crustacea* collected during the scientific expeditions of the Travailleur and Talisman. This volume contains descriptions of the *Brachyura* and *Anomura* and is designated "Crustacés décapodes, Première partie."

The systematic portion of this Record is very lengthy this year, the *Decapoda* comprising by far the greater portion of it. Some lengthy papers have also been issued dealing with fossil *Ostracoda*.

A place of importance must be given to the papers describing Messrs GAMBLE & KEEBLE's researches on the colour variation and the physiology of coloration in *Hippolyte varians*. The paper published in *Quart. J. Micr. Sci.* is admirably illustrated.

Crustacea have always been a favourite group for observations and experiment on variation and a considerable number of papers record observation on this subject and on such other subjects of general interest as Regeneration, Relation to Surroundings, Commensalism, etc. SCOURFIELD's method of examining the swimming habits of *Daphnia* may here be mentioned.

A useful summary of the Deep Sea Zoological work of the "Investigator" has been prepared by Major ALCOCK who has also issued Part VI. of his "Materials for a Carcinological Fauna of India."

The Editor of the "American Naturalist" has for some time past been issuing Synopses of North American Invertebrates which can hardly fail to be of service to collectors and lead to an increase in the number of workers in any group. Initial difficulties in studying many of the Arthropod groups are probably responsible for the comparatively small number of workers on them and such summaries as Miss RATHBUN & Miss RICHARDSON have issued will go a long way towards overcoming these initial difficulties in the case of American Students. A work which may be mentioned here is YOUNG's "Stalk-Eyed *Crustacea* of British Guiana, W. Indies and Bermuda." Criticism of the nomenclature of this book by STEBBING will be found in *Nature*, lix, p. 98.

Important contributions have been made by COUTIÈRE in his Monograph on the *Palæmonidae* of the Fresh waters of Madagascar and by GIESBRECHT in his volume on "Die Asterocheriden des Golfs von Neapel."

GRUVEL & WELTNER, and especially the former Author, have given a good deal of attention to the *Cirripedia* during the year. On the other hand the amount of matter published on such groups as the *Amphipoda* and *Isopoda* is less than usual. SARS has completed his account of the *Crustacea* of Norway, vol. iii, and the high character of this model work is well maintained.

HOLT & BEAUMONT have published a useful paper on the *Schizopoda* of Ireland which is issued apparently in three forms, viz. as a part of the Tr. Dublin Soc., as one of the "Studies from the Marine Laboratory of the Royal Dublin Society" and as part of a "Survey of the Fishing Grounds, West Coast of Ireland." It is well to mention this fact to avoid confusion in the future.

I. TITLES.

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4 Crust.

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II. BIOLOGY.

1. ANATOMY AND MORPHOLOGY.

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 Morphology of the cavernicolous *Sphaeromidae* ; VIRÉ (176).
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 Eye rudiments of *Niphargus* ; VEJDovsky (173).
 The Curvature of the Compound Eyes of Arthropoda ; RÁDL (124).
 Structure of the Optic Tract of *Squilla mantis* ; RÁDL (125).
 Structure of intestine of *Squilla mantis* ; ORLANDI (117).
 Structure of the Gastric Gland of Decapoda ; MACMUNN (101).

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- Physiology of colouration in *Hippolyte varians* ; KEEBLE & GAMBLE (91).
 Power of Colour Change in Crustacea ; GAMBLE (65).
 Colour Change in *Hippolyte varians* ; GAMBLE & KEEBLE (66).
 Change of Colour in Prawns ; Nature lxi, p. 552.
 Absence of Glycogen from the Gastric Gland of Decapoda ; MACMUNN (101).
 Functions of the Gastric Gland in Decapoda ; MACMUNN (101).
 Action of gases on the muscles of *Astacus fluviatilis* ; WEHMEYER (180).
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 Solvent action of ferment secreted by *Tubicinella trachealis* on the epidermis of the Southern Right Whale ; MARLOTH, Tr. S. Afric. Soc. xi.
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 Regeneration of Appendages in the Hermit Crab ; M.

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 Specific Gravity of Crustacea in relation to habits ; WILLIAMS (185).
 Phosphorescence in an Ostracod, p. 356 ; STEAD (155).

3. DEVELOPMENT, &c.

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 Embryology of *Nebalia geoffroyi*, p. 495 ; BUTCHINSKY, Zool. Anz. xxiii.
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 The Nauplius stage of *Penaeus* ; KISHINONYE (93).
 Discussion of certain facts in the life-history of *Sacculina* ; DELAGE (46).
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4. HABITS, COMMENSALISM, &c.

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 Occurrence, Appearance, Periodicity etc. of the Crustacea in the Gulf of Triest ; GRAEFFE (73).
 Relation of *Scapholeberis mucronata* to the surface film of water ; SCOURFIELD (151).
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 Reaction of *Daphnia magna* to environmental changes ; WARREN (178).

7. DISTRIBUTION.

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 Distribution of British Subterranean *Amphipoda*, p. 143 ; CHILTON (26).
 Crustacea of High Mountain Lakes ; ZSCHOKKE (191).
 Distribution of *Asterocheridae*, p. 199 ; GIESBRECHT (70).
 Geographical distribution of Arctic Crustacea, p. 357 ; DOFLEIN (52).
 Geographical distribution of Atlantic *Copepoda* ; CLEVE (32).
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8. CLASSIFICATION AND NOMENCLATURE.

Classification of the *Catometopa*, diagnoses of families etc. ; ALCOCK (2).
 The *Telphusidae* evicted from the *Catometopa*, *Geocarcinus* placed in the *Telphusidae* ; ALCOCK (2).

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 Discussion of the genus *Euphausia* and list of characters suitable for specific distinctions, p. 537 ; STEBBING, P. Z. S. 1900.
 Index to Linnæan names of Crustacea ; SHERBORN (154).
 Notes on British spp. of *Amphipoda* ; NORMAN, Ann. Nat. Hist. v.

9. METHODS.

New method of examining living Entomostraca and similar small organisms ; SCOURFIELD (152), p. 396.

Method of preserving *Crustacea* ; SAYCE (146).

10. MISCELLANEOUS.

Plague of Octopus on the South Coast in relation to Crab and Lobster Fisheries ; GARSTANG (67).

Ravages of Crabs in China ; KUMAGUSU MINIKATA, Nature lxi, p. 491.
 Perforation of boulders by an Isopod Crustacean, p. 348 ; STEAD (155).

III. DISTRIBUTION.

A. LAND AND FRESHWATER FORMS.

Palearctic Region.

i. NEW SPECIES.

Sauve : n. sp. of *Cæcosphaeroma* ; DOLLFUS & VIRÉ (49).

Brandenburg : n. sp. of *Alona* ; HARTWIG (84) ; n. sp. of *Candona* ; HARTWIG (80) : 2 n. spp. of *Candona* ; HARTWIG, SB. Ges. naturf. Berlin 1900, pp. 139 & 149.

Switzerland : n. sp. of *Candona* ; KAUFMANN (88) : n. spp. of *Candona* ; KAUFMANN (89) : 3 n. gg. and 10 n. spp. of *Ostracoda* ; KAUFMANN (89).
 Italy : 4 n. spp. of terrestrial *Isopoda* ; TUA (169).
 Sardinia : n. sp. of *Porcellio* ; TUA (169).
 Lake Baikal : n. sp. of *Calanidae* ; SARS (138).

ii. LOCAL FAUNÆ.

Great Britain : Subterranean *Amphipoda* ; CHILTON (26).
 Lough Ree, Ireland : *Entomostraca* ; KANE (87).
 Italy : Terrestrial *Isopoda* ; TUA (169).—Near Rome : *Ostracoda* ; NAMIAS (107).
 Birre : *Decapoda* ; GOURRET (72).
 Switzerland : *Cypridae* and *Darwinulidae* ; KAUFMANN (88).
 Germany : Freshwater *Copepoda* ; DOUWE (53).—North Germany, Inland Lake : *Mysis*, *Pallasicella* and *Pontoporeia* ; SAMTER & WELTNER (136).
 Karthaus, Klostersee : *Crustacea* ; LAKOWITZ (95).
 Saratow : Plankton Crustacea of the Volga ; ŽYKOFF (192).
 Balkans : *Diaptomidae* ; STEUER (161).

Ethiopian Region.

i. NEW SPECIES.

Madagascar : 2 n. spp. of *Palæmon* ; COUTIÈRE (38).

ii. LOCAL FAUNÆ.

Madagascar : *Palæmonidae* ; COUTIÈRE (36) : *Macrura* ; COUTIÈRE (40).

Oriental Region.

i. NEW SPECIES.

Borneo : n. sp. of *Potamon* ; BORRADAILE (14).

ii. LOCAL FAUNÆ.

Borneo : Freshwater *Decapoda* ; BORRADAILE (14).

Australian and Polynesian Region.

i. NEW SPECIES.

Celebes : 2 n. spp. of *Cladocera* ; STINGELIN (163).

Victoria : n. g. of *Isopoda* ; SAYCE (141) : n. sp. of *Niphargus* ; SAYCE (142) : n. sp. of *Phreatoicus* ; SAYCE (143) : n. g. of *Isopoda* ; SAYCE (144).
 Sandwich Is. : *Isopoda*, 4 n. spp. of *Armadillo* and n. sp. of *Geoligia* ; DOLLFUS (48).

ii. LOCAL FAUNÆ.

Celebes : *Cladocera* of fresh-water ; STINGELIN (163).

New Zealand : Fresh-water *Paranephrops* ; CHILTON (27).

Christmas Is. : Land *Crustacea* ; ANDREWS (5).

Sandwich Is. : *Talitridæ* ; STEBBING (158).

Nearctic Region.

N. America : *Isopoda* ; RICHARDSON (131).

New Mexico : n. sp. of *Cambarus* ; COCKERELL & PORTER (34).

B. SALT LAKE FORMS.

Odessa : Crustacea of Salt Lakes ; BUTSCHINSKY (20).

Lake Urmi : *Crustacea* incl. n. sp. of *Artemia* ; GÜNTHER (79).

C. MARINE FORMS.

Arctic Seas.

Arctic : *Crustacea* ; STEBBING, Ann. Nat. Hist. v, p. 1 : *Crustacea* ; STEBBING (159) : *Decapoda* ; DOFLEIN (52) : *Cirripedia* ; WELTNER (181) : *Cumacea* ; ZIMMER (190).

Spitsbergen : Plankton *Crustacea* ; CLEVE (29).

Antarctic Seas.

Antarctic : *Crustacea* ; COUTIÈRE (39) : *Decapoda* ; COUTIÈRE (41).

British and N. European Seas.

i. NEW SPECIES.

North Sea : n. sp. of *Heterocheta* ; AURIVILLIUS (8).

Faroë Channel : 2 n. spp. of *Amphipoda* ; NORMAN (114) : n. sp. of *Amphipoda* ; NORMAN (113) : *Amphipoda*, 3 n. spp. ; NORMAN, Ann. Nat. Hist. v.

Norway : n. sp. of *Cumacea* ; SARS (137).

N.E. of Butt of Lewis : n. sp. of *Amphipoda* ; NORMAN (115).

Liverpool Bay : n. sp. of *Leptopyllus* ; THOMPSON & SCOTT (167).

Alnmouth : 3 n. spp. *Crustacea* ; BRADY (17).

S.E. coast of England : n. sp. of *Amphipoda* ; NORMAN (116).

Plymouth : n. sp. of *Amphipoda* ; NORMAN (116).

ii. LOCAL FAUNÆ.

North Sea : Plankton *Crustacea* ; CLEVE (31).

Norway : *Cumacea* ; SARS (137).

Skagerak : Plankton *Crustacea* ; CLEVE (31).

Gt. Britain : *Amphipoda* ; NORMAN (113-116).

Scotland : *Cumacea* ; SCOTT (149).

Fife : *Platyarthrus hoffmannseggii*, p. 186, EVANS, Ann. Scott. Nat. Hist. ix.

Firth of Clyde : *Crustacea* ; SCOTT (150).

Alnmouth : *Crustacea* ; BRADY (17).

Essex Coast : *Malacostraca* ; LOVETT (100).

English Channel : Plankton *Crustacea* ; CLEVE (31).

Salcombe Estuary : *Crustacea* ; ALLEN & TODD (4).

Falmouth : *Crustacea* ; VALLENTIN, J. Inst. Cornwall xiv.

W. Prussia : *Decapoda* ; SELIGO (153).

Europe : n. sp. of *Argulus* ; NETTOVICH (109).

Atlantic Ocean.

i. NEW SPECIES.

- Atlantic: *Amphipoda*, n. sp. of *Grubia*; CHEVREUX (24): 2 n. sp. of *Alpheidae*; COUTIÈRE (42).
 Angola: n. sp. of *Grapaeus*; DE MAN (47).
 Monrovia: *Decapoda* n. sp. of *Clibanarius*; RATHBUN (130).
 Senegal: n. sp. of *Polonyx* (parasitic); SAINT-JOSEPH (135).
 S. Africa: n. sp. of *Palinurus*, n. sp. of *Callianassa*; STEBBING (156).
 Near Azores: 5 n. spp. of *Verruca*; GRUVEL (77): 9 n. spp. of *Scalpellum*; GRUVEL (75a).—Pico (near): n. sp. of *Heterocarpus*; EDWARDS & BOUVIER (57).
 N. America: n. sp. of *Cyclodorippes*; RATHBUN (127), p. 519.
 Beaufort, N.C.: n. sp. of *Pinnixa*; RATHBUN (128).
 Galveston, Texas: n. sp. of *Uca*; RATHBUN (128).
 Pensacola, Florida: n. g. of *Pinnotheridae*; RATHBUN (127).
 Bogota: n. sp. of *Potamocarcinus*; DOFLEIN (50).
 Brazil: 6 n. spp. of *Decapoda*; RATHBUN (129): *Isopoda*, n. sp. of *Bopyrus*; RICHARDSON (132): n. g. of *Macrothricidae*; SARS (139).
 Argentina: *Stomatopoda*, n. sp. of *Lysiosquilla*, *Apodidae*, n. sp. of *Lepidurus*; BERG (11).
 Patagonia: 8 n. spp. of *Cladocera*; EKMAN (59): n. sp. of *Scalpellum*; GRUVEL (75).
 Falkland Islands: *Schizopoda*, n. sp. of *Euphausia*; STEBBING, P. Z. S. 1900, p. 545.
 Sargasso Sea: n. sp. of *Verruca*; GRUVEL (77).

ii. LOCAL FAUNÆ.

- Atlantic: *Copepoda*; CLEVE (32).
 W. Coast of Ireland: *Schizopoda*; HOLT & BEAUMONT (86).
 W. Africa: *Decapoda*; RATHBUN (130).
 Angola: *Decapoda*; DE MAN (47).
 S. Africa: *Decapoda*, *Isopoda*, *Copepoda*, *Cirripedia*; STEBBING, S. Afric. Crust. (156).
 N. America: *Isopoda*; RICHARDSON (131).
 W. Indies: *Decapoda* and *Stomatopoda*; YOUNG (189).
 Bermuda: *Decapoda* and *Stomatopoda*; YOUNG (189).
 Cuba: *Crustacea*; GUNDLACH (78).
 British Guiana: *Decapoda* and *Stomatopoda*; YOUNG (189).
 Brazil: *Isopoda*; RICHARDSON (132): *Decapoda* and *Stomatopoda*; RATHBUN (129).
 Patagonia: *Cladocera*; EKMAN (59).
 Falkland Islands: *Decapoda*, *Schizopoda* and *Isopoda*; STEBBING, P. Zool. Soc. London 1900, p. 517.

Mediterranean Seas.

i. NEW SPECIES.

- Toulon: n. sp. of *Chondracanthidae*; VANNEY & CONTE (172).
 Bay of Naples: 3 n. spp. of *Copepoda*; GIESBRECHT (71): 2 n. spp. of *Asterocheridae*; GIESBRECHT (70).
 Roumania: 8 n. spp. *Crustacea*; COSMOVICI (35).

ii. LOCAL FAUNÆ.

Bay of Naples : *Asterocheridae* ; GIESBRECHT (70).

Hungary : *Crustacea* ; DADAY (45).

Roumania : *Crustacea* ; COSMOVICI (35).

Triest : *Crustacea* ; GRAEFFE (73).

Indian Ocean.

i. NEW SPECIES.

Indian Ocean : n. sp. of *Eithusa*, p. 474; MCARDLE (102).

E. Africa : n. g. and 2 n. spp. of *Argulidae* ; THIELE (164).

Djibouti : n. sp. of *Dichelaspis* ; GRUVEL (74).

Madagascar : n. sp. of *Callianassa* ; COUTIÈRE (37).

Suez : n. sp. of *Dichelaspis* ; GRUVEL (74).

Aden : n. sp. of *Dotilla* ; ALCOCK (2).

Persian Gulf : n. sp. of *Libystes* ; ALCOCK (2).

Andamans : 11 n. spp. of *Grapsoidea* ; ALCOCK (2).

India : 16 n. spp. of *Grapsoidea* : ALCOCK (2); 3 n. spp. of *Phyllopoda* ; SARS (140).

Ceylon, off W. coast : n. sp. of *Cyrtomaia* ; off N.E. coast : n. sp. of *Calocaris* ; MCARDLE (101).

ii. LOCAL FAUNÆ.

India : *Phyllopoda* ; SARS (140).

India and Ceylon : *Decapoda*, *Grapsoidea* ; ALCOCK (2).

Malaysian Seas.

i. NEW SPECIES.

Malay Archipelago : 2 n. spp. of *Caridina*, n. sp. of *Palæmon*, 2 n. spp. of *Potamon* ; NOBILI (111).

Sumatra : n. sp. of *Dichelaspis* ; GRUVEL (74).

Java : n. sp. of *Palæmon* ; NOBILI (112).

Singapore : 5 n. spp. of *Brachyura* ; LANCHESTER (97).

Malacca : n. sp. of *Brachyura* ; LANCHESTER (97).

Philippine Islands : n. sp. of *Lepas* ; GRUVEL (76).

ii. LOCAL FAUNÆ.

Malay Archipelago : *Decapoda* and *Stomatopoda* ; NOBILI (111); *Mala-*
costraca ; LANCHESTER (96).

Singapore : *Brachyura* ; LANCHESTER (97).

Malacca : *Brachyura* ; LANCHESTER (97).

Pacific Ocean.

i. NEW SPECIES.

- San Pedro Bay, Calif.: n. sp. of *Raphonotus*; RATHBUN (128).
 Monterey Bay: n. sp. of *Cancer*, n. sp. of *Lophopanopeus*; RATHBUN (128).
 San Diego: 2 n. spp. of *Lophanopeus*; RATHBUN (128).
 Funafuti and Rotuma: n. sp. of *Sesarma*; BORRADAILE (15).
 Funafuti: n. sp. of *Xenocarcinoides* and n. sp. of *Pachygrapsus*; BORRADAILE, P. Z. S. 1900: n. sp. of *Armadillidium*, n. sp. of *Lithotrya*; BORRADAILE (16).
 Rotuma: n. sp. of *Pilumnus*, n. sp. of *Xanthias*, n. sp. of *Carpiliodes*, n. sp. of *Chlorodius*; BORRADAILE, P. Z. S. 1900.
 Papuasia, Moluccas and Australia: *Crustacea*, 10 n. spp.; NOBILI (110).
 Torres Straits: 2 n. spp. of *Brachyura*; CALMAN (21).
 Australia: n. sp. of *Sphyriion*; THOR (168).
 N.S. Wales: 4 n. spp. of *Decapoda*; WHITLEGGE (186).
 New Zealand: n. g. of *Schizopoda*; THOMSON (167).—Otago, N.Z.: n. sp. of *Amphipoda*; CHILTON (25).
 Japan: n. sp. of *Panulirus*; DOFLEIN (51); n. g. of *Copepoda*; EMBLETON (60): 2 n. spp. of *Argulus*; THIELE (164).

ii. LOCAL FAUNÆ.

- N. America: *Isopoda*; RICHARDSON (131).
 Sandwich Islands: *Isopoda*; DOLLFUS (49).
 Fiji: List of *Brachyura*; BORRADAILE (15), p. 570.
 Funafuti: List of *Brachyura*; BORRADAILE, P. Z. S. 1900, p. 568.
 Rotuma: List of *Brachyura*; BORRADAILE, P. Z. S. 1900, p. 569.
 Papuasia, Moluccas and Australia: *Crustacea*; NOBILI (110).
 Torres Straits: *Brachyura*; CALMAN (21).
 N.S. Wales: *Decapoda*; WHITLEGGE (186).
 New Zealand: *Schizopoda*; THOMSON (167).

Habitat unknown.

- 2 n. spp. of *Dichelaspis*; GRUVEL (74).

D. FOSSIL FORMS.

- Palaeozoic, America: 9 n. spp. of *Ostracoda*; ULRICH (170).
 Upper Silurian, Prussia: *Leperditia* incl. 3 n. spp.; CHMIELEWSKI (28).
 Cretaceous, Rehna: *Ostracoda*; GEINITZ & SCHACKO (68).—Upper Bavarian Alps: *Ostracoda* incl. n. sp.; EGGER (58).
 Upper Cretaceous, British Columbia: *Crustacea* incl. 4 n. spp.; WOODWARD (188).
 Gault, Folkestone: n. g. of *Decapoda*; WOODWARD (187).
 Tithonian: 2 n. spp. of *Ostracoda*; CHAPMAN (23).
 Tertiary, N. Germany: 40 n. spp. *Ostracoda*; LIENENKLAUS (98).—Hungary: *Crustacea* incl. 27 n. spp.; LÖRENTHEY (99).
 Lower Miocene, Patagonia: n. sp. of *Scalpellum*; ORTMANN (119).

IV. SYSTEMATIC.†

MALACOSTRACA.

PODOPHTHALMA.

DECAPODA.

[The following systematic papers deal with *Decapoda*:—ALCOCK (2), ALCOCK & ANDERSON (3a), BORRADAILE (14 & 15), CALMAN (31), CHILTON (27), COCKERELL & PORTER (34), COUTIÈRE (36–42), DOFLEIN (50–52), DE MAN (47), EDWARDS & BOUVIER (56 & 57), GOURRET (72), GUNDLACH (78), LANCHESTER (96 & 97), LÖRENTHY (98), LOVETT (100), MARSH (104), MCARDLE (102), NOBILI (110–112), RATHBUN (126–130), SAINT-JOSEPH (135), SELIGO (153), STEBBING (156, 157, 159), WHITLEGGE (186), WOODWARD (187 & 188), YOUNG (189).]

Achaeus lacertosus, pl. xxxiii, figg. 1 & 1a; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *A. cursor*, p. 181, pls. xxi, figg. 15 & 16, xxi, figg. 1–3; EDWARDS & BOUVIER, Decap. Exped. Trav.

Achelous rubro-marginatus, Singapore, p. 746, pl. xlvi, fig. 8; LANCHESTER, P. Z. S. 1900, n. sp.

Actaea nodulosa var. *bullifera*, pl. xxxvii, fig. 2, *echinus*, pl. xxxvii, fig. 3, *flosculata*, pl. xxxvii, fig. 4; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *A. calcicosa*, notes, p. 8; CALMAN, Tr. Linn. Soc. viii. A., miscellaneous notes on various spp. of the g. from Singapore and Malacca, p. 733; LANCHESTER, P. Z. S. 1900. *A. pulchella* var. *modesta*, notes, discussion of possible identity of *A. pulchella* and *A. modestus*, p. 251; LANCHESTER, Ann. Nat. Hist. vi.

Actaeodes tomentosus, notes on specimens from Singapore, p. 734; LANCHESTER, P. Z. S. 1900.

Actaeomorpha lapillulus, pl. xxviii, fig. 3, *morum*, pl. xxviii, fig. 4; ALCOCK & ANDERSON, Illustr. Zool. Investigator.

Actaeopsis n. g. of *Brachyura* defined for *pallida*, Singapore [= *Carpiliodes pallidus* Borradaile] p. 741, pl. xlv, fig. 6; LANCHESTER, P. Z. S. 1900.

Actumnus fissifrons, pl. xxxviii, fig. 5, *arbutum*, pl. xxxviii, fig. 6, *tessellatus*, pl. xxxviii, fig. 9; ALCOCK & ANDERSON, Illustr. Zool. Investigator.

Xegeon cataphractus, notes, p. 50; STEBBING, S. Afric. Crust.

Albunea elegans, p. 273, pl. xxviii, figg. 22–25; EDWARDS & BOUVIER, Decap. Exped. Trav.

Alpheidae, key to W. African genera, p. 312; RATHBUN, P. U. S. Mus. xxii.

Alpheus shearnei, pl. xli, fig. 4 & 4a; ALCOCK & ANDERSON, Illustr. Zool. Investigator.

Anamathia rissoana, p. 138, pl. xx, fig. 11; EDWARDS & BOUVIER, Decap. Exped. Trav.

Anapagurus dubius, p. 215, pl. xxviii, figg. 1–8, *levius*, p. 217, pl. xxviii, figg. 9 & 10, *bicorniger*, p. 220, pl. xxv, figg. 14–22, *brevicarpus*, pl. xxv, figg. 23–26, xxviii, figg. 11; EDWARDS & BOUVIER, t. c.

Anilocra capensis, distinction from other spp. of g., p. 57; STEBBING, S. Afric. Crust.

Arctus crenatus, N. S. Wales, p. 194, fig. 14; WHITLEGGE, Mem. Austral. Mus. iv, n. sp.

† This sign when prefixed to a quotation indicates a fossil form or forms. When the character of a reference is not indicated the words "described" or "a notes" are to be understood.

- Astaconephrops*, n. g of *Decapoda reptantia* for *albertisii*, Katau, ♀ descr., p. 244; NOBILI, Ann. Mus. Genova xl, n. sp.
- Astucopsis australasiensis*, Bay of Sydney, descr., p. 247; NOBILI, t. c.
- Astacus*, synonymy and remarks, p. 33, *capensis*, descr., p. 34; STEBBING, S. Afric. Crust.
- Atya brevirostris* var. *de mani*, Fiume Sereinu, p. 475; NOBILI, Ann. Mus. Genova xl.
- Atyidae*, key to W. African genera, p. 313; RATHBUN, P. U. S. Mus. xxii.
- Automate rugosa*, Atlantic, p. 357; COUTIÈRE, C.R. Ac. Sci. cxxxii, n. sp.
- Baptozius vinosus*, pl. xxxviii, fig. 3; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Benthescymus investigatoris*, pl. xli, fig. 2; ALCOCK & ANDERSON, t. c.
- Bithynis*, key to W. African spp., p. 315; RATHBUN, P. U. S. Mus. xxii.
- Calappa*, key to W. African spp., p. 296; RATHBUN, t. c. *C. pustulosa*, pl. xxviii, fig. 1, *wood-masoni*, pl. xxviii, fig. 2; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- +*C. heberti*, Tertiary, Hungary, p. 113, pls. viii, figg. 1-3, ix, fig. 1; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii.
- +*Calappilia dacica*, Tertiary, Hungary, p. 39, pl. i, figg. 5a & 6; LÖRENTHEY, t. c.
- Calastacus felix*, pl. xlvi, figg. 3 & 3a; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Calcinus talismani*, p. 173, pl. xxiii, figg. 15-18; EDWARDS & BOUVIER, Decap. Exped. Trav. *C. sulcatus*, colour of Brazilian specimens, p. 144; RATHBUN, P. Washington Ac. ii.
- Callianassa*, key to W. African spp., p. 308; RATHBUN, P. U. S. Mus. xxii. *C. lignicola*, pl. xlvi, figg. 2-2b; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. martensi*, Buntal, p. 261, pl. xii, figg. 4 & 4a, notes on a ♂; LANCHESTER, Ann. Nat. Hist. vi. *C. turnerana*, Cameroons, Fresh-water, notes, p. 3; NOBILI, Boll. Mus. Torino xv, No. 379. *C.*, list of n. spp. since A. Milne-Edwards' revision of g., p. 38; STEBBING, S. Afric. Crust.
- +*C. fraasi*, Tertiary, Hungary, p. 95, pl. v, fig. 4, LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii. +*C. whiteavesii*, notes, p. 435, pl. xvii, figg. 2a & b; WOODWARD, Geol. Mag. vii, 1900.
- C. krausei*, Gordon's Bay, Cape of Good Hope, p. 39, pls. 2 & 3; STEBBING, S. Afric. Crust. *C. grandidieri*, Madagascar, descr. and fig., p. 285; COUTIÈRE, Bull. Mus. Paris 1899, n. spp.
- +*C. räkosiensis*, p. 131, pl. ix, figg. 4a-4c; *brochii*, p. 132, pl. ix, figg. 5a-5c, Tertiary, Hungary; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii, n. spp.
- Callianassidae*, key to W. African genera, p. 308; RATHBUN, P. U. S. Mus. xxii.
- Callinectes*, key to W. African spp., p. 290; RATHBUN, t. c. *C. diacanthus*, p. 71, pl. iv, fig. 5; EDWARDS & BOUVIER, Decap. Exped. Trav. *C. marginatus*, Angola, p. 41, pl. i, fig. 5; DE MAN, Mem. Soc. zool. France xiii. *C. marginatus*, colour of Brazilian specimens, p. 142; RATHBUN, P. Washington Ac. ii.
- Calocaris alcocki*, off N.E. Ceylon, p. 476; MCARDLE, Ann. Nat. Hist. vi, n. sp.
- Camatopsis*, g. def., p. 328, *rubida*, p. 329; ALCOCK, J. Asiat. Soc. Bengal lxix.
- Cambarus gallinus*, Gallinas R., Las Vegas, New Mexico, p. 434; COCKERELL & PORTER, P. Ac. Philad. 1900, n. sp.
- Cancellus parfaiti*, p. 183, pl. xxiii, figg. 20-30; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Cancer pagurus*, monstrosity, p. 80, pl. i; BOLAM, Hist. Berwick Club xvii: meristic variation in, p. 484; PATTERSON, Zoologist lviii.

- C. jordani*, Monterey Bay, p. 133; RATHBUN, Amer. Natural. xxxiv, n. sp.
 +*C. böckhii*, p. 74, pl. iv, fig. 5, *szontaghii*, p. 120, pl. viii, figg. 4a-d, Tertiary, Hungary; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii, n. spp.
- Carcinoplax*, g. defined, p. 301, *longimanus*, *longipes*, descr., p. 303; ALCOCK, J. Asiat. Soc. Bengal lix. *C. subinteger*, alteration of specific name from *C. integer* de Man, p. 750, pl. xlvi, fig. 9, var. *hirsutior* nov., Singapore, p. 751; LANCHESTER, P. Z. S. 1900.
- Carcinus mænas*, occurrence in Port Phillip, Australia, p. 206; FULTON, Victorian Natural. xvii.
- Cardiosoma*, g. def., p. 444, *carnifex*, p. 445, *hirtipes*, p. 447; ALCOCK, J. Asiat. Soc. Bengal lix.
- Caridina modiglianii*, Kifa-juc, *atyoides*, Si Oban, p. 478; NOBILI, Ann. Mus. Genova xl, n. spp.
- +*Carinocarcinus*, n. g. for *zittelii*, Tertiary, Hungary, p. 196, pl. i, figg. 1a-d, LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii.
- +*C. sp.*, p. 94, sp., p. 96, pl. v, figg. 5a & 5b, *spinosa*, p. 97, pl. v, fig. 6, Tertiary, Hungary; LÖRENTHEY, t. c., n. spp.
- Carpilius corallinus*, p. 367; GUNDLACH, An. Ac. Habana xxxvi.
- Carpilodes lophopus*, pl. xxxvi, fig. 2, *pediger*, pl. xxxvi, fig. 4, *cariosus*, pl. xxxvi, fig. 7; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- C. pallidus*, Rotuma, descr., p. 586, pl. xl, fig. 3; BORRADAILE, P. Z. S. 1900. *C. socius*, Singapore, descr., p. 731, pl. xliv, fig. 4; LANCHESTER, P. Z. S. 1900, n. spp.
- Catapaguroidea microps*, p. 207, pl. xxiv, figg. 17-29, *megalops*, p. 210, pl. xxv, figg. 1-5, *acutifrons*, p. 212, pl. xxv, figg. 6-11; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Catapagurus muricatus*, pl. xxxi, figg. 3-3c; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Catoptris*, g. defined, p. 307, *nitidus*, descr., p. 307; ALCOCK, J. Asiat. Soc. Bengal lix.
- Ceratoplax* g. def., p. 319, *ciliata*, p. 320; ALCOCK, t. c.
- C. hispida*, Palk Sta., p. 321; ALCOCK, t. c. n. sp.
- Charybdis rivers-andersoni*, pl. xlvi, fig. 3, *investigatoris*, pl. xlvi, fig. 4; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. merguiensis*, Amboina, notes on ♂, p. 254; NOBILI, Ann. Mus. Genova xl.
- Chasmocarcinops*, n. g. def. for *gelasimoides*, off Madras, p. 334; ALCOCK, J. Asiat. Soc. Bengal lix, n. sp.
- Chlorinoides longispinus*, pl. xxxiv, figg. 4-4b; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. aculeatus*, Singapore and Malacca, criticism of var. *armatus*, p. 724; LANCHESTER, P. Z. S. 1900.
- C. waitci*, N. S. Wales, p. 143, pl. xxxiii; WHITLEGGE, Mem. Austral. Mus. iv, n. sp.
- Chlorodius americanus*, p. 371; GUNDLACH, An. Ac. Habana xxxvi.
- C. barbatus*, Funafuti and Rotuma, descr., p. 587, pl. xli, fig. 4; BORRADAILE, P. Z. S. 1900, n. sp.
- Chlorodopsis wood-masoni*, pl. xxxviii, fig. 7; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *C. pilumnoides*, possible distinction in colouring between the sexes, p. 737; LANCHESTER, P. Z. S. 1900.
- Clibanarius*, key to W. African spp., p. 304; RATHBUN, P. U. S. Mus. xxii. *C. antillensis*, colour of Brazilian specimens, p. 144; RATHBUN, P. Washington Ac. ii. *C. strigimanus*, p. 167; WHITLEGGE, Mem. Austral. Mus. iv.
- C. cooki*, Monrovia, ♂ descr., p. 305 and figg.; RATHBUN, P. U. S. Mus. xxii, n. sp.
- Clistoceloma* g. def., p. 428, *balansæ*, p. 429, *merguinæ*, p. 429; ALCOCK, J. Asiat. Soc. Bengal lix.
- Clistostoma*, g. def., p. 372, *dotilliforme*, Karachi, p. 373; ALCOCK, 1900. [VOL. XXXVII.]

- +Caeloma vareolata*, Tertiary, Hungary, p. 206, pl. ii, figg. 5a-5e; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii, n. sp.
- Crangon antarcticus*, notes, p. 1266; COUTIÈRE, C.R. Ac. Sci. cxxx : S. Georgia, p. 240; COUTIÈRE, Bull. Mus. Paris 1900.
- Crangonidae*, discussion of the family, p. 46, key to genera, p. 49; STEBBING, S. Afric. Crust.
- Cryptocnemis haddoni*, Mer, Torres Sts., p. 25, pl. i, figg. 4-8; CALMAN, Tr. Linn. Soc. viii, n. sp.
- +Cyamocarcinus angustifrons*, Tertiary, Hungary, p. 69, pl. iii, figg. 2a-2d; LÖRENTHEY, Math. term. Kozlem. Magyar Ak. xxvii.
- Cyclodorippa plana*, N. America, p. 519; RATHBUN, Amer. Natural. xxxiv, n. sp.
- Cyclograpus occidentalis*, p. 111, pl. xviii, figg. 1-5; EDWARDS & BOUVIER, Decap. Exped. Trav. *C. occidentalis*, Angola, p. 57; DE MAN, Mem. Soc. zool. France xiii.
- C. beccarii*, Dorei, p. 270; NOBILI, Ann. Mus. Genova xl, n. sp.
- Cyloxoanthops denticulatus*, note on colour of Brazilian specimens, p. 138; RATHBUN, P. Washington Ac. ii.
- Cyloxoanthus lineatus*, variation from M. Edwards' species, p. 735; LANCHESTER, P. Z. S. 1900.
- Cymo quadrilobatus*, pl. xxxviii, fig. 8; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Cymonomus granulatus*, p. 34, pl. xi, figg. 5-19; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Cyrtomaia goodrigei*, off W. Coast of Ceylon, p. 472; MCARDLE, Ann. Nat. Hist. vi, n. sp.
- Dahaanius* g. characterised, p. 18, *dentatus*, notes, p. 19; STEBBING, S. Afric. Crust.
- Dicranodromia mahyeuxi*, descr., p. 14, pls. iii, fig. 4, ix, figg. 1-11; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Diogenes*, key to W. African spp., p. 306; RATHBUN, P. U. S. Mus. xxii.
- Diptychus rubro-vittatus*, p. 356, pl. xxxii, figg. 6-14, *nitidus*, p. 360, pls. iv, fig. 4, xxxii, figg. 15-19; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Dorippe facchino*, Singapore and Malacca, commensal with anemones, p. 769; LANCHESTER, P. Z. S. 1900.
- Dorippidae*, key to W. African genera, p. 299; RATHBUN, P. U. S. Mus. xxii.
- Dotilla*, g. def., p. 363, *intermedia*, p. 365, *brevitarsis*, p. 367, *myctiroides*, p. 368; ALCOCK, J. Asiatic Soc. Bengal lxix.
- D. affinis*, Aden, p. 365, *blanfordi*, Coast of Sind, p. 366, *clepsydrodactylus*, False Pt., p. 367; ALCOCK, t. c. n. spp.
- Dromia*, key to W. African spp., p. 300; RATHBUN, P. U. S. Mus. xxii. *D. vulgaris*, descr., p. 17, pl. ix, fig. 15, *nodosa*, p. 18, pl. ix, figg. 12-14; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Dromidiopsis*, n. g. defined for *Dromidia australiensis*, p. 572; BORRADAILE, P. Z. S. 1900.
- Dynomene filholi*, descr., p. 5, pls. iii, fig. 3, viii, figg. 1-18; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Ebalia*, key to W. African spp., p. 298; RATHBUN, P. U. S. Mus. xxii. *E. diadumena*, pl. xxix, fig. 4, *wood-masoni*, pl. xxix, fig. 5, *sagittifera*, pl. xxix, fig. 9; ALCOCK & ANDERSON, Illustr. Zool. Investigator. *E. cranchii*, p. 41, pl. xii, fig. 1-3, *granulosa*, p. 42, pl. xii, fig. 4, *edwardsi*, p. 43, pl. xii, figg. 5-7, *algirica*, p. 44, pl. xii, figg. 8-14, *nux*, p. 45, pls. iii, fig. 7, xiii, figg. 1-5, *tuberosa*, p. 47, pl. xii, figg. 15-21, *atlantica*, p. 51, pl. xiii, figg. 6-10; EDWARDS & BOUVIER, Decap. Exped. Trav.
- Echinophilus*, n. g. of *Pinnotheridae* for *mellita*, Pensacola, Florida, p. 590; RATHBUN, Amer. Natural. xxxiv, n. sp.

- Echinoplax pungens*, pl. xxxix; ALCOCK & ANDERSON, Illustr. Zool. Investigator.
- Elamena*, g. def., p. 385, *truncata*, p. 386; ALCOCK, J. Asiat. Soc. Bengal lix.
- E. sindensis*, Karachi, p. 386; ALCOCK, t. c. n. sp.
- Elasmoneurus vaillanti*, p. 333, pl. xxxi, figg. 8-10; EDWARDS & BOUVIER, Decap. Exped. Trav.
- †*Enoplocydia minor*, Upper Cretaceous, B. C., p. 434; WOODWARD, Geol. Mag. vii, 1900, n. sp.
- Epigrapsus*, g. def., *politus*, p. 443; ALCOCK, J. Asiat. Soc. Bengal lix.
- Epimenes cessaci*, p. 76, pl. xv, figg. 1-8; EDWARDS & BOUVIER, Decap. Exped. Trav.
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- Xenophthalmodes*, g. def., p. 322, *moebii*, p. 324; ALCOCK, J. Asiatic Soc. Bengal lix.
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- Amer. Natural. xxxiv.

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(Vacant.)

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- Myzopontius*, g. def., p. 106, *pungens*, Naples Bay, p. 24, pls. i, fig. 6, vi, 1-14, synonymy, p. 85; GIESBRECHT, Fauna Stat. Neapel xxv.
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- S. australicus*, Australia, p. 280, pl. xviii; THOR, t. c., n. sp.
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OSTRACODA.

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- C. lobipes***, Brandenburg, p. 51; HARTWIG, Zool. Anz. xxii; *C. reniformis*, Brandenburg, p. 139, *holzkampfi*, Brandenburg, p. 149; HARTWIG, SB. Ges. naturf. Berlin 1900; *C. devera*, p. 108, *studeri*, p. 109, both from Switzerland; KAUFMANN, Zool. Anz. xxii; *C. caudata*, Switzerland, p. 365, pl. xxiv, figg. 16-20, xxvi, figg. 17-23; KAUFMANN, Rev. Suisse Zool. viii: n. spp.
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GIGANTOSTRACA

i.e., TRILOBITA, XIPHOSURA and EURYPTERIDA.

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II. BIOLOGY.

Restoration of *Stylonurus lacoanus*; BEECHER (1).
Notes on the British spp. of *Conocoryphe*; REED (7).

III. DISTRIBUTION.

Palæozoic. China : 2 n. gg. and 6 n. spp. of Trilobites; BERGERON (2).
Cambrian. Newfoundland: *Trilobita*; MATTHEW (5).
Lower Cambrian. E. Massachusetts: *Trilobita*; BURR (3).
Upper Cambrian. British Columbia: *Trilobita* incl. 5 n. spp.; MATTHEW (4).
Lower Silurian. Baffin Land; Trilobites incl. n. sp.; SCHUCHERT (9).
Wenlock Shales. Malvern: 2 n. spp. Trilobites; THOMAS (11).
Shineton Shales. Shropshire: n. sp. of *Olenus*; THOMAS (11).
Etcheminian. Smith Sound, Newfoundland: *Trilobita*; MATTHEW (6).
Lower Carboniferous. Schleswig-Holstein: Trilobites incl. 4 n. spp.; SCUPIN (10).

IV. SYSTEMATIC.

TRILOBITA.

- [†]*Agnostus montis*, Upper Cambrian, British Columbia, p. 43, pl. i, fig. 6; MATTHEW, Tr. R. Soc. Canada v.
[†]*A. donvillei*, Palæozoic, China, p. 503, pl. xiii, fig. 3; BERGERON, Bull. Soc. geol. France xxvii, n. sp.
[†]*Agraulus strenuus* var. *nasutus*, p. 46; BURR, Amer. Geol. xxv.
[†]*Aptychopsis terranovicus*, Upper Limestone, Newfoundland, p. 118, pl. vii, figg. 5 & 6; MATTHEW, Tr. R. Soc. Canada v, Sect. iv.

- \dagger *Arthricocephalus*, n. g. def. for *chauveauii*, Palæozoic, China, p. 514, fig. 9 in text; BERGERON, Bull. Soc. géol. France xxvii, n. sp.
- \dagger *Atops trilineatus*, Cambrian, Newfoundland, p. 89, pl. iv, fig. 8; MATTHEW, Tr. R. Soc. Canada v.
- \dagger *Avalonia plana*, Cambrian, Newfoundland, p. 81, pl. iv, fig. 7; MATTHEW, t. c., n. sp.
- \dagger *Bathyuriscus pupa*, Upper Cambrian, British Columbia, p. 51, pl. ii, fig. 5; MATTHEW, t. c., n. sp.
- \dagger *Calymene sinensis*, Palæozoic, China, p. 500, pl. xiii, figg. 1 & 2; BERGERON, Bull. Soc. géol. France xxvii, n. sp.
- \dagger *Conocephalites cf. perseus*, Upper Cambrian, British Columbia, p. 46, pl. ii, fig. 4; MATTHEW, Tr. R. Soc. Canada v.
- \dagger *Corynexochus ramingeri*, Upper Cambrian, British Columbia, p. 47, pl. ii, fig. 3; MATTHEW, t. c., n. sp.
- \dagger *Dalmanites goodridgii*, Lower Silurian, Baffin Land, p. 174, pl. xii, figg. 5 & 6; SCHUCHERT, P. U. S. Mus. xxii, n. sp.
- \dagger *Dicellocephalus sinensis*, Palæozoic, China, p. 508, pl. xiii, fig. 7; BERGERON, Bull. Soc. géol. France xxvii, n. sp.
- \dagger *Dolichometopus occidentalis*, Upper Cambrian, British Columbia, p. 49, pl. ii, fig. 2; MATTHEW, Tr. R. Soc. Canada v, n. sp.
- \dagger *Dorypyge davisoni*, Upper Cambrian, British Columbia, p. 56, pl. iii, fig. 1; MATTHEW, t. c.
- \dagger *Drepanura*, n. g. def. for *premesnili*, Palæozoic, China, p. 509, pl. xiii, fig. 8; BERGERON, Bull. Soc. géol. France xxvii, n. sp.
- \dagger *Erinnyx breviceps*, Cambrian, Newfoundland, p. 91, pl. iv, fig. 9; MATTHEW, Tr. R. Soc. Canada v.
- \dagger *Griffithides damei*, nom. nov. for *Archegonus aequalis*, p. 10, pl. i, fig. 7; SCUPIN, Zeitschr. Deutsch. geol. Ges. lii.
- \dagger *G. frechi*, p. 12, pl. i, fig. 6, *depressus*, p. 13, pl. i, fig. 5, *claviger*, p. 14, pl. i, figg. 6 a, b, and 9, Lower Carboniferous, Schleswig-Holstein; SCUPIN, t. c., n. spp.
- \dagger *Metadoxides magnificus*, p. 46; BURR, Amer. Geol. xxv. \dagger *M. magnificus*, Cambrian, Newfoundland, p. 83, pl. viii, figg. 1a-c; MATTHEW, Tr. R. Soc. Canada v.
- \dagger *Micmacca walcotti*, p. 79, pl. iv, figg. 5a-d, *angimargo*, p. 80, pl. iv, fig. 6, Cambrian, Newfoundland; MATTHEW, t. c., n. spp.
- \dagger *Microdiscus cf. helena*, p. 47; BURR, Amer. Geol. xxv. \dagger *M. bellimarginatus*, p. 75; MATTHEW, Tr. R. Soc. Canada v.
- \dagger *Neolenus*, n. g. def. for *serratus* (= *Ogygia serrata* Roem.), p. 53; MATTHEW, t. c.
- \dagger *N. granulatus*, Upper Cambrian, British Columbia, p. 55, pl. ii, figg. 1a-c; MATTHEW, t. c., n. sp.
- \dagger *Nesureutus recurvatus*, p. 307, pl. xii, fig. 4, *quadratus*, p. 307, pl. xii, fig. 5, sp. ?, p. 308, pl. xii, fig. 6, Tremadoc, Ramsey Is.; REED, Geol. Mag. vii.
- \dagger *Obolella atlantica*, p. 47, sp., p. 48; BURR, Amer. Geol. xxv.
- \dagger *Olenellus broggeri*, p. 43, *asaphoides*, p. 45, sp., p. 45; BURR, t. c.
- \dagger *Olenoides leblanci*, Palæozoic, China, p. 506, pl. xiii, figg. 5 & 6; BERGERON, Bull. Soc. géol. France xxvii, n. sp.
- \dagger *Olenus planti*, p. 303, pl. xii, fig. 1, *expansus*, p. 306, pl. xii, figg. 2 & 3, Upper Lingula Flags, Mocl Gron; REED, Geol. Mag. vii.
- \dagger *O. mitchisoni*, Shineton Shales of Shineton, Shropshire, p. 619, pl. xxxv, figg. 5 & 6; THOMAS, Quart. J. Geol. Soc. lvi, n. sp.
- \dagger *Orthotheca cylindrica*, p. 48; BURR, Amer. Geol. xxv.
- \dagger *Oryctocephalus walkeri*, Upper Cambrian, British Columbia, p. 60, pl. iii, fig. 2; MATTHEW, Tr. R. Soc. Canada v, n. sp.
- \dagger *Phacops coronatus*, Wenlock Shales, Malvern, p. 616, pl. xxxv, figg. 1-4, *nobilis*, Wenlock Shales, Brecknockshire, p. 617, pl. xxxiv, fig. 13; THOMAS, Quart. J. Geol. Soc. lvi.

- †*Phillipiaes qualis*, p. 2, pl. i., figg. 10-12, *longicornis*, p. 5, *gemmulifera*, p. 6, *truncatula*, p. 7, pl. i, fig. 4, sp., p. 10; SCUPIN, Zeitschr. Deutsch. geol. Ges. lii.
- †*P. silesiaca*, Lower Carboniferous, Schleswig-Holstein, p. 8, pl. i, figg. 1-3; SCUPIN, t. c., n. sp.
- †*Psychoparia cordillera*, Upper Cambrian, British Columbia, p. 44, pl. i, fig. 7; MATTHEW, Tr. R. Soc. Canada v.
- †*Strenuella strenua*, p. 76, pl. iv, fig. 3, *attleborensis*, p. 77, pl. iv, figg. 4a-c, Cambrian, Newfoundland; MATTHEW, t. c.

EURYPTERIDA and XIPHOSURA.

- †*Stylonurus lacoanus*, restoration, p. 145; BEECHER, Amer. J. Sci. x.

XI. ARACHNIDA.

BY

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INTRODUCTION.

FEW general remarks need be made on the Record of Arachnida for 1900. There is a slight increase in the number of Titles, but these for the most part deal with descriptions of new or old species and do not therefore call for special mention. A study of the Distribution Section of this Record will show that considerable effort was spent on Palaearctic Arachnida during 1900, whilst a similar examination of the Systematic list will reveal the increasing attention devoted to orders other than the Aranæ and Acari. The Scorpions in particular are becoming a far better known group.

POCOCK (74) makes certain criticisms on and mentions omissions from KRAEPELIN's Scorpiones in "Das Tierreich."

POCOCK's volume on the Arachnida in "The Fauna of British India" seems to be the largest work of the year and is in every way an excellent monograph. It is much to be regretted that works of this type are not more common.

Considerable progress was made during the year with the second volume of "Arachnida Araneida" in the *Biologia Centrali-Americanica*, whilst more plates of Volume I were issued. Volume II makes certain changes in the nomenclature and specific determinations of Volume I.

SIMON has published two lengthy and important papers on the *Attidae*, preparatory to the publication of the next part of "Les Araignées" which will be recorded for the year 1901.

The Recorder much regrets having hitherto overlooked two parts (vii and viii) of CANESTRINI's "Prospetto dell' Acarofauna italiana," a work containing a number of papers by other specialists. He has further to call attention to an unfortunate error in the Geographical Section of the Record for 1897. The slips recording two of SIMON's papers for that year apparently got misplaced. The correction of the resulting errors will be found in the Distribution Section.

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II. BIOLOGY.

1. Morphology.

- Anatomy of *Norneria gigas*; NORDENSKIÖLD (59A).
Structure of the Red Spiders of the United States; BANKS (7), p. 67.
Nervous System of *Phalangidæ*; APPELT (3).
Tracheal system of *Araneæ*; LAMY (47).
Palpi of Male Spiders; ROBERTSON (84).
Observations on structure of the ♂ rostrum of *Ixodes redurius* as a copulatory organ; LEWIS (51).

Copulatory organs of *Arrenurus*; THON (105).
Kenenia mirabilis, structure, p. 837; WHEELER, Amer. Natural. xxxiv.
 Polymorphism amongst *Gamasidae*; FOA (38).

2. Embryology.

Egg of *Oribatidæ*, p. 31, pl. v; RICHTERS, Ber. Senckenberg. Ges. 1900.
 Parthenogenesis amongst *Gamasidae*; FOA (38).
 Copulation in *Ixodes redivivus*; LEWIS (51).
 Life History of *Amblyomma hebraicum*; LOUNSBURY (56).
 The Accessory Chromosome in the Spider; WALLACE (123).

3. Classification and Nomenclature.

Scorpiones. Order characterised, discussed, and classified, pp. 5-12; POCOCK (68).

Pedipalpi divided into two orders *Uropygi* and *Amblypygi*.—*Uropygi*, discussed, p. 100, suborders def. and discussed, pp. 101 & 118.—*Amblypygi* order discussed, p. 123; POCOCK (68).

Idracnidi, characteristics and subdivisions of the group discussed, etc.; CANESTRINI, p. 835, Prospet. Acarof. Ital. vii.

Classification of *Hydrachnidæ*; THOR (108).

Account of the Italian spp. of *Listrophoridae*; CANESTRINI (24), *Canestrinidae*; CANESTRINI (25), *Demodicidae*; CANESTRINI (27).

The genus *Eriophyes*; NALEPA (59).

Key to spp. of *Trichotarsus*, p. 375; GIARD (41).

Table of British spp. of *Cnephhalocotes*, p. 203; CARPENTER (28).

Correction of key to *Sarcoptidae* published in "Das Tierreich," p. 121; OUDEMANS (60).

Correction of key to g. *Scutovortex* (*Acarí*) published in "Das Tierreich," p. 121; OUDEMANS (60).

Criticisms on the nomenclature and classification of *Scorpiones* and notes on omission of certain spp. from "Das Tierreich"; POCOCK (74).

Synonymy of Russian Scorpions; BIRULA (12).

Synonymy of *Philodromus generalii*; CASTELLI (29).

Changes in nomenclature of the *Oribatidæ*; OUDEMANS (62).

Names for "Spider"; TREGEAR (112).

Linnæan names of *Arachnida*; SHERBORN (87).

N.B. All special cases of changes of names of genera and species are enumerated in their places in IV. Systematic.

4. Habits and Biology.

Growth and Development of Instincts in Young Spiders; SARGENT (86).

Biology and Habits of *Argyroneta aquatica*; WAGNER (122).

Biology of Spiders; WESTBERG (126).

Biology of *Acarí*; LEONARDI (48).

Method of fixing itself to host of *Agave chitonis*, p. 107; BRUCKER & TROUESSART (17).

Accidental parasitism in Man of a Phytoparasitic Acarid; ARTAULT (4).

List of the *Acarí* commensal with or parasitic on Ants; LEONARDI, p. 848, in CANESTRINI's Prospet. Acarof. Ital. vii.

Nesting Habits of *Theridion lineatum*, p. 105; WILLANS, Tr. Scottish Nat. Hist. Soc. i, 1900.

- Habits of *Pæciolotheria*; POCOCK (76).
 Habits of *Kænenia mirabilis*, p. 248; WHEELER (127).
 Habits of Spiders; LONGLEY (52).
 Habits of S. African Ticks; LOUNSBURY (54).
 Habits of the Red Spiders of the United States; BANKS (7), p. 69.
 A Hunting Spider; WHITE (128).
 Bites of *Arachnida*; LOUNSBURY (55).

5. *Miscellaneous.*

- Evolution of certain spp. of *Acari*; TIETZE (111), p. 934.
 Preparation of Acari for examination; TIETZE, p. 935 (111).
 Geographical distribution of certain Italian Acari, pp. 931-934; TIETZE (111).

III. DISTRIBUTION.

Palearctic Region.

i. DISTRIBUTION OF THE NEW SPECIES.

- Europe: n. sp. of *Eriophyes*; NALEPA (58).
 Greenland: *Acari*, 3 n. spp. of *Phytoptidae*; ROSTRUP (85).
 Finland: n. sp. of *Scutovortex*; OUDEMANS (60).
 Norway: 3 n. spp. of *Hydrachnidæ*; THOR (109).
 Skarmodal: *Aranea*, n. sp. of *Draesus*; STRAND (102): 2 n. spp. of *Xysticus*; STRAND (103).
 Nadelholz: *Aranea*, n. sp. of *Xysticus*; STRAND (103).
 Kasnakow: n. sp. of *Thelyphonidae*; TARNANI (104).
 England: n. sp. of *Arrenurus*; GEORGE (40).
 Lancashire: n. sp. of *Agalena*; CARPENTER (28), p. 199.
 Ulster: n. sp. of *Arrenurus*; HALBERT (42).
 Holland: n. sp. of *Notaspis*; OUDEMANS (63).
 Marseilles: n. subsp. of *Halacaridae*; TROUESSART (115, 117).
 Wimereux: n. sp. of *Trichotarsus*; GIARD (41).
 E. Prussia: 3 n. spp. of *Hydrachnidæ*; PROTZ (81).
 Province of the Rhine: 9 n. spp. of Spiders; BOSENBERG (16).
 Trentine Alps: n. sp. of *Trombidium*; BUFFA (18).
 Italy: 4 n. spp. of *Oribatidae*; COGGI (33).—4 n. spp. of *Acari* commensal with Ants; LEONARDI (49).—2 n. spp. of *Acari*; TIETZE (111).
 San Remo: 2 n. spp. of *Notaspis*; OUDEMANS (64): 2 n. spp. of *Acari*; OUDEMANS (61).
 Macognaya near Monte Rosa: n. sp. of *Camisia*; OUDEMANS (60).
 Portici: 5 n. spp. of *Acari*; LEONARDI (50).
 Bologna: n. sp. of *Notaspis*; COGGI (34).
 Sicily: *Acari*, n. sp. of *Glyciphagus*; SICHER (88).
 Hungary: n. g. and 2 n. spp. of *Hydrachnidæ*; THON (106 & 107).
 Asia Minor: n. sp. of *Euscorpius*; BIRULA (14).
 Astracan: *Scorpiones*, n. sp. of *Buthus*; POCOCK (77).
 E. Persia: n. sp. and 5 n. subssp. of *Scorpiones*; BIRULA (13).
 Seir: *Scorpiones*, n. subsp. of *Buthus*, *Aranea*, n. sp. of *Lycosidæ*; POCOCK (77).
 Lake Urmi: n. sp. of *Galeodes*; POCOCK (77).

Teneriffe: *Pseudoscorpiones*, n. sp. of *Garypus*; TULLGREN (121).
 China: *Acaris*, 2 n. spp. of *Eriophyes*; TROTTER (113).
 Japan: 3 n. spp. of *Acaris*; OUDEMANS (60).
 2 n. spp. of *Holostaspis*; FOA (38).

ii. LOCAL FAUNÆ.

Greenland: *Acaris*, *Phytoptidae*; ROSTRUP (85).
 Vegesack: *Acaris*; OUDEMANS (60), p. 121.
 Holland: *Acaris*; OUDEMANS (63).
 Great Britain: *Araneæ*; CAMBRIDGE, O. (21).—*Araneæ*; SMITH (99).—
 Rare *Acaris*; POCOCK (80).—*Hydrachnidæ*; SOAR (101).
 Perthshire: *Araneæ*; EVANS (37).
 Oban: *Hydrachnidæ* with *Acericus ligulifer* and *Torrenticolar anomala*
 recorded for the first time in Britain; SOAR (100).
 Lancashire: *Cnephalocotes*; CARPENTER (28), pp. 201 & 203.
 Grantham: *Phalangida* and *Araneæ*; WOODRUFFE-Peacock (131),
 p. 79.
 New Forest: *Hydrachnidæ*; HARRIS & SOAR (43).
 Hastings: *Araneæ*; SMITH (98).
 Ireland: *Araneæ*; CAMBRIDGE, O. (21).
 Germany: *Hydrachnidæ*; PIERSIG (66).
 Bremen: *Acaris*, p. 114; OUDEMANS (60).
 Uclès (Spain): *Arachnidæ*; SIMON (94).
 Polesine (Rodvigo): *Arachnidæ*; CASTELLI (30).
 Italy: *Pseudoscorpiones*; SIMON (90).—*Acaris* in Ants' nests; LEONARDI
 (49).—*Acaris*; TIETZE (111).
 San Remo: *Acaris*; OUDEMANS (61).
 Malamocco (Venice): *Acaris*; TIETZE (111).
 Hungary: *Scorpiones*; CHYZER (31).—*Araneæ*; CHYZER & KULCZNSKI
 (32).—*Pseudoscorpiones* and *Opiliones*; DADAY (35).—*Acaris*; GABLONOWSKI
 (39).—*Hydrachnidæ*; THON (106 & 107).—*Tardigrada*; DADAY (36).
 Canary and Balearic Ils.: *Chelonethi*; TULLGREN (121).
 Azores: *Halacaridae*; TROUESSART (116 & 118).
 Asia Minor: *Scorpiones*; BIRULA (14).
 E. Persia: *Scorpiones*; BIRULA (13).
 Lake Urmi: *Acaris*; MICHAEL (57).

Ethiopian Region.

i. DISTRIBUTION OF THE NEW SPECIES.

Cameroons: 97 n. spp. (incl. some n. gen.) of *Araneæ*; THORELL (110).—
 u. sp. of *Jotus*; THORELL, Bib. Svenska Ak. xxv.
 Congo: *Araneæ*, n. sp. of *Attidæ*; SIMON (92); n. sp. of *Attidæ*; SIMON
 (93).
 Erythræa: *Pseudoscorpiones*, n. sp. of *Chelifer*; SIMON (91).
 Kinani, E. Africa: *Araneæ*, n. g. of *Theraphosidae*; POCOCK (75).
 Djibouti: 4 n. spp. and n. subsp. of *Halacaridae*; TROUESSART (117).
 Somaliland: n. sp. of *Solifuga*; POCOCK (71); 2 n. spp. of *Acaris*,
 5 n. spp. of *Scorpiones*, n. subspp. of *Scorpiones*; POCOCK (78 & 79).
 Mashonaland: 2 n. spp. of *Solifugæ*; POCOCK (71).
 Little Namaqualand: n. sp. of *Solifugæ*; POCOCK (71).
 Transvaal: *Araneæ*, n. sp. of *Attidæ*; SIMON (92).

Natal : *Araneæ*, 4 n. spp. of *Attidae*; SIMON (92): n. sp. of *Attidae*; SIMON (93).

Cape Colony : 2 n. spp. of *Solifugæ*, 33 n. spp. incl. 3 n. gg. of *Araneæ*; POCOCK (73).

Cape of Good Hope : *Araneæ*, n. sp. of *Attidae*; SIMON (92).

S. Africa : 6 n. spp. of *Scorpiones*; PENTHER (65).

Nossibé : *Araneæ*, 2 n. spp. of *Attidae*; SIMON (92).

Madagascar : *Araneæ*, *Attidae*, 9 n. spp.; SIMON (92): n. sp. of *Attidae*; SIMON (93).

Diego-Suarez : *Araneæ*, n. sp. of *Attidae*; SIMON (92).

Mauritius : *Araneæ*, n. sp. of *Attidae*; SIMON (92).

Arabia : n. sp. of *Scorpiones*; POCOCK (74), p. 363.

Bushire, Persian Gulf : *Scorpiones*, n. sp. of *Heterometrus*; POCOCK (74), p. 364.

ii. LOCAL FAUNÆ.

Somaliland : *Scorpiones*; POCOCK (79).

Nearctic Region.

i. DISTRIBUTION OF THE NEW SPECIES.

N. America : 2 n. spp. of *Phalangida*; BANKS (10): 12 n. spp. of Spiders; BANKS (9).

Alaska : 4 n. spp. of *Araneæ*, n. sp. of *Phalangida* and n. sp. of *Acari*; BANKS (11).

U.S.A.: 5 n. spp. of *Tetranychus*, n. sp. of *Stigmæus*; BANKS (7).

Michigan Lakes : 3 n. gg. and 4 n. spp. of *Hydrachnidæ*; WOLCOTT (130).

Florida : *Pseudoscorpiones*, n. sp. of *Atemnus*; TULLGREN (120).

ii. LOCAL FAUNÆ.

N. America : *Scorpiones*, *Pedipalpi* and *Solifugæ*; BANKS (5).

Alaska : *Arachnida*; BANKS (11).

United States : *Tetranychus* and *Stigmæus*; BANKS (7).

Neotropical Region.

i. DISTRIBUTION OF THE NEW SPECIES.

St Thomas Is. : *Araneæ*, 3 n. spp. of *Theraphosidae*; POCOCK (75).

Las Palmas : *Araneæ*, 2 n. spp.; SIMON (97).

México : n. g. and 3 n. spp. of *Phalangida*; BANKS (10).—3 n. spp. of *Ctenus*, n. sp. of *Selenops*, n. sp. of *Pseudosparianthis*, 3 n. spp. of *Sparassus*, n. sp. of *Martella*, 4 n. spp. of *Lysomanes*; CAMBRIDGE, F. (19).

Guatemala : 2 n. spp. of *Clubiona*, 4 n. spp. of *Anypheña*, n. sp. of *Aysha*, n. sp. of *Teudis*, 2 n. spp. of *Sillus* (n. g.), n. sp. of *Wulfila*, 5 n. spp. of *Ctenus*, n. sp. of *Selenops*, n. sp. of *Sparassus*, n. sp. of *Misumenoides* (n. g.), 2 n. spp. of *Minumeneops* (n. g.), 5 n. spp. of *Lysomanes*; CAMBRIDGE, F. (19).—*Thelyphonidae*, n. sp. of *Mastigoproctus*; POCOCK (71).

Costa Rica : 2 n. spp. of *Ctenus*, 2 n. spp. of *Cobanus*; CAMBRIDGE, F. (19).

Panama: n. sp. of *Anypheana*, n. sp. of *Ayeha*, n. sp. of *Teudis*, n. sp. of *Sillus* (n. g.), n. sp. of *Celatyccheus*, n. sp. of *Paratobias* (n. g.), n. sp. of *Toxeus*, n. sp. of *Synageles*, n. sp. of *Lysomanes*; CAMBRIDGE, F. (19).

S. America: *Acari*, n. sp. of *Eriophyes*; TROTTER (114).—2 n. spp. of *Myrmecophilous Acari*; WASMANN (125).

Colombia: n. sp. of *Euophrus*; PENTHER (in 11 A), p. 285.

Ecuador: *Aranea*, n. sp. of *Attidae*; SIMON (93).—3 n. spp. of *Scorpiones*; POCOCK (72).

Brazil: *Aranea*, 6 n. spp. of *Attidae*; SIMON (92); 44 n. spp. of *Attidae*; SIMON (93).

Amazons: *Aranea*, 5. n. spp. of *Attidae*; SIMON (92).

Quilipué: *Aranea*, n. sp. of *Lycosa*; SIMON (97).

Bahia: n. sp. and n. subsp. of *Halacaridae*; TROUESSART (115 & 117).

Bolivian Andes: n. g. of *Solifugae*; POCOCK (71).

Chañarcillo: *Aranea*, n. sp. of *Lithyphantes*; SIMON (97).

Cayenne: *Aranea*, n. sp. of *Attidae*; SIMON (93).

Baños: n. sp. of *Scorpiones*; POCOCK (72).

Sinche: n. sp. of *Scorpiones*; POCOCK (72).

Vera Cruz: 2 n. spp. of *Scorpiones*; POCOCK (72).

Lujan: *Aranea*, n. sp. of *Citharoscelus*; POCOCK (69).

Inca: *Scorpiones*, n. sp. of *Bothriurus*; *Solifugae*, n. sp. of *Cleobis*; POCOCK (69).

Peru: n. sp. of *Scorpiones*; POCOCK (72).

Peruvia: *Aranea*, 2 n. spp. of *Attidae*; SIMON (93).

Venezuela: *Aranea*, *Attidae*, 8 n. spp.; SIMON (92); 6 n. spp. of *Attidae*; SIMON (93).

Patagonia: *Pseudoscorpiones*, n. sp. of *Chelifer*; TULLGREEN (120).

Argentina: *Aranea*, 2 n. spp. of *Attidae*; SIMON (92).—n. sp. of *Brachiosternus*; LONNBERG (53).

Paraguay: *Aranea*, n. sp. of *Attidae*; SIMON (92).

Valparaiso: *Aranea*, n. sp. of *Meta*; SIMON (97).

Tierra del Fuego: *Acari*, n. sp. of *Rhombognathus*; TROUESSART (115 & 117).

ii. LOCAL FAUNA.

Central America: *Aranea*; CAMBRIDGE, F. (19).

Chili: *Scorpiones*; BORELLI (15).

Aconcagua Valley: *Arachnida*; POCOCK (69).

Tierra del Fuego: *Scorpiones*; LONNBERG (53).

Oriental and Australian Regions.

i. DISTRIBUTION OF THE NEW SPECIES.

Indian Ocean: n. subsp. of *Halacaridae*; TROUESSART (115 & 117).

India: *Scorpiones*, 2 n. gg., 12 n. spp. and 15 n. subsp.; *Solifugae*, 5 n. spp. and 2 n. subsp.; *Pedipalpi*, 3 n. spp.; *Aranea*, 4 n. gg. and 30 n. spp.; POCOCK (68).—*Aranea*, 3 n. spp. of *Paeliotheria*; POCOCK (76).—*Aranea*, 2 n. spp. of *Attidae*; SIMON (92); 4 n. spp. of *Attidae*; SIMON (93).

W. India: n. sp. of *Solifugae*; POCOCK (71).

Colombo: *Aranea*, 3 n. spp. of *Attidae*; SIMON (92).

Kandy: *Aranea*, 2 n. spp. of *Attidae*; SIMON (92).

Yunnan: *Thelyphonidae*, n. sp. of *Hypoconus*; POCOCK (71).

Singapore: *Aranea*, n. sp. of *Attidae*; SIMON (92); n. sp. of *Attidae*; SIMON (93).

Siam: *Thelyphonidae*, n. sp. of *Thelyphonus*, n. sp. of *Tyropeltis*; POCOCK (71).

Cochin China: *Acuri*, 2 n. spp. of *Halacarus*; TROESSART (115 & 117).

Java: *Aranea*, 2 n. spp. of *Attidae*; SIMON (92): 2 n. spp. of *Attidae*; SIMON (93).

Borneo: n. g. of *Attidae*; WARBURTON (124).

Celebes: n. sp. of *Thelyphonidae*; TAKANI (104).

Philippines: *Aranea*, n. sp. of *Attidae*; SIMON (92).

Manila: *Aranea*, 2 n. spp. of *Attidae*; SIMON (92).

Taprobanie: *Aranea*, n. sp. of *Attidae*; SIMON (92): 3 n. spp. of *Attidae*; SIMON (93).

Sandwich Islands: *Arachnida*, incl. many n. genera and n. spp.; SIMON (89).

Christmas Is.: *Pseudoscorpiones*, n. sp. of *Chelifer*; *Aranea*, n. subsp. and 2 n. spp.; POCOCK (70).

N. Guinea: *Aranea*, n. sp. of *Attidae*; SIMON (92).

Australia: *Aranea*, 4 n. spp. of *Attidae*; SIMON (92).

N. S. Wales: 3 n. spp. of *Aranea*, n. var. of *Dicrostichus furcatus*; RAINBOW (82).—*Aranea*, 2 n. spp. (incl. n. g.) of *Thomisidae*; RAINBOW (83).

Victoria: 6 n. gg. and 21 n. spp. of *Aranea*; HOGG (45).

ii. LOCAL FAUNA.

British India: *Arachnida* (except *Acaris*); POCOCK (68).

Australia: *Acuri*; ANON (1).

Victoria: *Aranea*; HOGG (45).

Christmas Island: *Arachnida*; POCOCK (70).

CORRECTION OF RECORD FOR 1897.

On p. 12 in Arachnida of Vol. xxxiv, in the Geographical Section 46 n. spp. and 3 n. gg. from the Island of St Vincent are wrongly placed in the Palearctic Region, they should come under the Neotropical Region, as also should the reference to SIMON (124). The Spiders described in this paper come from Antillean—not from Atlantic—St Vincent.

IV. SYSTEMATIC.

ARACHNIDA.

[The following papers deal with *Arachnida* generally: BANKS (6, 11), CASTELLI (30), POCOCK (68, 70, 73, 77, 78), SHERBORN (87), SIMON (89).]

SCORPIONES.

[Consult, in addition to papers mentioned under "Arachnida generally," the following: BANKS (5), BIRULA (12, 13, 14), BORELLI (15), CHYZER (31), LÖNNBERG (53), PENTHER (65), PIERSIG (66, 67), POCOCK (69, 72, 74, 79).]

Bothriurus chilensis, p. 62, BORELLI, Revist. chilena iv.

B. alticola, Inca, p. 357, fig. 1, POCOCK, in FITZGERALD'S The Highest Andes, n. sp.

Brachistosternus weissenberghi, p. 61, BORELLI, Revist. chilena iv.

- Buthoolus*, g. def. and key to spp., p. 28, *melanurus*, p. 28, *pallidus*, *flavescens*, p. 30, *bicolor*, p. 31, POCOCK, Faun. Brit. Ind. Arach.; *B. melanurus*, p. 373, var. *dentatus*, nov., p. 375, BIRULA, Bull. Ac. St. Petersb. xii.
- B. melanurus persa*, E. Persia, p. 374, BIRULA, t. c. n. subsp.
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TARDIGRADA.

[See DADAY (36).]

XII. MYRIOPODA AND PROTO- TRACHEATA.

BY

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INTRODUCTION.

THE Record of Myriopoda for 1900 shows very little change from its predecessors. The group, perhaps by reason of its difficulty, does not attract many specialists, though increased study of it is much to be desired.

The largest paper of the year is the second part of ATTEMS' "System der Polydesmiden." VERHOEFF continues his papers on Palaearctic Myriopoda and a number of papers have been published by H. W. BRÖLEMANN. Beyond these there is nothing calling for special mention in the Introduction.

The Recorder, following the plan he has adopted for some years in this and other Arthropod Records, has arranged all the genera of Diplopoda

alphabetically instead of under their respective families. It seems impossible to arrange the genera in any other way so that it may be of use to systematists, and the most desirable method of arrangement is that which avoids the region of controversy altogether.

The Record of Prototracheata is the largest and in some ways the most important yet compiled by the Recorder.

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33. —. Über *Schendyla* und *Pectinunguis*. T. c. pp. 483–486.
34. —. Unerhörte Nährweise eines Diplopoden. T. c. pp. 541–543.
35. —. Ein unbekanntes Merkmal junger Iuliden. T. c. pp. 551–553, 1 fig. in text.

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 France: *Myriopoda*, BRÖLEmann (11).
 Spain (Cuenca): *Myriopoda*, BRÖLEmann (10).
 Switzerland: *Myriopoda*, ROTHENBÜHLER (24).
 Canary Is.: *Myriopoda*, BRÖLEmann (14).
 Siebenbürgen: *Diplopoda*, VERHOEFF (28).
 Hungary: *Myriopoda*, DADAY (17).

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 Cuenca: n. sp. of *Polydesmus*, BRÖLEmann (10).
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XIII. INSECTA.

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INTRODUCTION.

THE literature of Insecta recorded this year is very extensive, the number of titles in our list being 1431 against 1241 last year, and 1346 in 1898—the previous maximum. In addition a large number of faunistic memoirs and shorter notes have been placed in the subject-indices, though not in the titles, so that somewhere between 1800 and 2000 works, papers and notes bearing on Insecta are recorded this year.

SJÖSTEDT (1221) has produced his monograph of African Termitidae: it includes 82 species, a number nearly equal to that known from all the world at the date of HAGEN's monograph. The first Insect-part of das Tierreich, BORMANS & KRAUSS (153) has appeared, and HAMPSHOR (544) has completed the second volume of the British Museum Descriptive Catalogue of Moths. MARCHAL (852) has described a new aquatic Hymenopteron, SKORIKOW (1227) a *Japyx* an inch and a half long. SPEISER's revisions of some of the curious families of *Diptera Pupipara* are of considerable interest and Miss RICARDO's revision of *Pangoninae* appears to be a valuable contribution to our knowledge of exotic *Diptera*—a branch of Entomology which is also redeemed from neglect by the work of STEIN (1276–1280) and others.

ASHMEAD has continued his work on *Hymenoptera*. His paper on *Ichneumonidae* (38) will no doubt much facilitate the study of that enormous and extensive group. He considers that a million species of parasitic *Hymenoptera* are at present in existence and that about 10,000 of these have been described. His work on W. Indian *Hymenoptera* (40) is also of considerable importance; he catalogues about 1300 species; and as he also mentions in their proper positions the names of the families that are not represented, it is possible for one who is not a completely informed Hymenopterist to form an opinion as to the fauna.

PAGENSTECHER's account (974, 975) of the *Lepidoptera* of the Bismarck Archipelago, though certainly very far indeed from exhaustive, is one of the best we have for any group of tropical islands. PIEPER & SNELLEN (1038) have published the first part of what promises to be an important work on the *Lepidoptera* of Java. HUTTON continues his papers on the entomology of New Zealand, dealing this time with the *Tipulidae*, or Craneflies, of which he lists 44 species, more than half of them new (631).

The Harriman expedition to Alaska has resulted in an important increase in our knowledge of the entomology of that region. The series of papers hitherto published is given under KINCAID (710). Considerable progress has been made with the Biologia Centrali-Americanana, GODMAN (511); and PERKINS (990) has done a good deal at the Hawaiian *Coleoptera*.

WASMANN's (1377) paper makes us acquainted with a considerable number of extraordinary forms of *Coleoptera* living with migratory ants in S. America and Africa.

One of the most important papers of the year is that by PETERSEN on the morphology and classification of *Lepidoptera*. He considers and generalises the various anatomical points with a view to basing a classification on the whole of them.

Prof. LAMEERE'S volume (794) illustrates his views as to the classification of Insects, and gives keys for determining the species of several Orders. MEIJERE'S paper on the larva of *Lonchoptera* has an important bearing on the classification of *Diptera*.

BORDAS makes several contributions to anatomy; his work (144) on the reproductive organs of *Coleoptera* reviews 200 species, exhibiting great

variety, but capable of being classed in two or three great divisions. His paper on *Brachytrupes* makes us acquainted with a very remarkable arrangement of Malpighian tubes (149, 150).

ZANDER (1422) has continued his study of the sexual structures of *Hymenoptera* in a paper that will no doubt receive serious consideration from those who are establishing a terminology for these parts.

MIAILL & HAMMOND'S work on the structure and life-history of *Chironomus* gives a large amount of valuable information in a clear and concise form. In Embryology we may point to KNOWER'S Termitid paper (738) and HEYMONS' remarks thereon.

From FOLSOM we have an important work on the morphology of the head and its appendages, giving special attention to the hypopharynx and treating of the relations between *Crustacea* and *Insecta*.

NEEDHAM (936) gives an extremely interesting sketch of the metamorphosis of a *Coleopteron*, showing that a more extensive study in this Order is likely to reveal facts of great importance as regards the growth of wings and legs and the phenomena of phagocytosis.

MERCER (896) has given the results of his investigation of the development of the wings of *Lepidoptera*, somewhat extending the discoveries of GONIN and others.

Great interest continues to be displayed in the physiology of metamorphosis, and numerous papers and discussions of the subject are recorded (see subject-index). BERLESE gives an important paper (103), and in (104) he impugns the destructive functions of the phagocytes.

PRATT (1054) has traced the origin of the imaginal discs in *Melophagus* to an early period of the embryonic development.

TORNIER (1325) has an interesting, if not very conclusive, study of malformations in *Coleoptera*. The determination of sex in parthenogenetic and other forms has been discussed at considerable length by CUÉNOT (304).

GAHAN'S review (478) of the stridulating organs of *Coleoptera* is of considerable interest.

FOREL (434) reproduces his former accounts of experiments as to Senses and Instinct, and adds a disquisition on the subject of Insect-psychology in general. WHELER'S study (1407, 8) of the habits and larvæ of *Ponerinae* will give great pleasure to ethologists. Miss ADELE FIELD describes a simple and efficient form of artificial nest for the observation of Ants and other Insects.

The first part of KIEFFER'S work on *Cecidomyiidae* (704) forms an important biological treatise, and gives much information as to galls. FABRE'S new (385) volume does not, as might be expected, relate to *Hymenoptera*, but gives much information—some of it new—as to oviposition of *Curculionidae*, the making of cases by *Lepidoptera* and *Coleoptera*, the "assembling" of *Lepidoptera*, etc. BOUVIER (165, 6) and MARCHAL (853) have made valuable notes on the Instinct of fossorial *Hymenoptera*.

In the economic department REUTER'S study (1103) of the causes bringing about "white-earedness" in corn and grasses appears to be important, and HUBER'S bibliography of clinical entomology (618) is arranged according to species and will therefore prove useful to the entomologist, who often finds it very difficult to get information as to the collateral aspects of his subject.

I. TITLES.*

ABAFI-AIGNER. [See AIGNER.]

1. **ABEILLE DE PERRIN**, E. *Malachides* recueillis par M. Eugène Simon au Cap de Bonne-Espérance. Rev. Ent. franc. xix, pp. 163-177. [*Coleoptera*.]
2. —. Voyage de M. E. Simon à l'île de Ceylan. 7^e mémoire. T. c. pp. 178-180. [*Coleoptera*.]
3. —. Description de deux *Staphylinides* nouveaux circuméditerranéens. Bull. Soc. ent. France 1900, pp. 203, 204. [*Coleoptera*.]
4. — & GROUVELLE, A. Descriptions de deux *Elmides* nouveaux de France. T. c. p. 137. [*Coleoptera*.]
5. ABSOLON, K. Einige Bemerkungen über mährische Höhlenfauna. [I. Aufsatz.] Zool. Anz. xxiii, pp. 1-6. [*Thysanura*.]
6. —. II. Aufsatz. T. c. pp. 57-60. [*Aptera*.]
7. —. III. Aufsatz. T. c. pp. 189-196. [*Aptera*.]
8. —. Vorläufige Mittheilung über einige neue *Collembolen* aus den Höhlen des mährischen Karstes. T. c. pp. 265-269.
9. —. Vorläufige Mittheilung über die *Aphoruriden* aus den Höhlen des mährischen Karstes. T. c. pp. 406-414. [*Aptera*.]
10. —. Über zwei neue *Collembolen* aus den Höhlen des österreichischen Occupations-gebietes. T. c. pp. 427-429.
11. ADLERZ, G. Biologiska meddelanden om rofsteklar. Ent. Tidskr. xxi, pp. 161-200. [*Hymenoptera*.]
12. AGASSIZ, G. Catalogue des Variétés et aberrations de ma collection. *Macrolepidoptères* de la zone paléarctique. Mt. Schweiz. ent. Ges. x, pp. 237-256.
13. AIGNER, ABIFI. *Acherontia atropos* életmódja. Rov. Lapok vii, pp. 51-55. [*Lepidoptera*.]
—. [See also PASZLAVSZKY (981).]
14. ATKEN, E. H. Butterflies as weather propheta. J. Bombay Soc. xiii, p. 540. [*Lepidoptera*.]
Re migration of *Euplea*.
15. ALFKEN, J. D. Die Gruppe der *Anthrena nigriceps* Kirby. Ent. Nachr. xxvi, pp. 3-7. [*Hymenoptera*.]
16. —. Zwei neue *Colletes*-Arten des paläarktischen Gebietes. T. c. pp. 74-76. [*Hymenoptera*.]
17. —. Über Leben und Entwicklung von *Eucera difficilis* (Duf.). T. c. pp. 157-159. [*Hymenoptera*.]
18. —. Drei neue *Anthrena*-Arten aus Japan. T. c. pp. 177-179. [*Hymenoptera*.]
19. —. *Bombus soricensis* F., Form *proteus* Gerst und seine Farben-Varietäten. T. c. pp. 184-190. [*Hymenoptera*.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

20. [ALFKEN, J. D.] *Stilbula knuthii*, eine neue javanische Eucharide (Chalcidoide). T. c. p. 191. [*Hymenoptera*.]
21. —. Die nordwestdeutschen *Prosopis*-Arten. T. c. pp. 233-244. [*Hymenoptera*.]
22. ALLUAUD, C. Contributions à la faune entomologique de la région Malgache. 8^e note. Bull. Soc. ent. France 1900, pp. 18-22. [*Coleoptera*.]
Includes two descriptions by FAIRMAIRE.
23. —. Deux Coléoptères nouveaux du Sud-est de Madagascar. Bull. Mus. Paris 1899, pp. 366, 367.
24. —. Description d'un Coléoptère nouveau du genre *Epacissus* (*Omoptron*) par M. Guillaume Grandidier dans le sud de Madagascar. T. c. p. 409.
25. —. Sur quelques Coléoptères de Madagascar de la famille des Carabiques, recueillis par M. Mocquerys et acquis par le Muséum. T. c. pp. 410-413.
26. —. Trois Coléoptères nouveaux pour la faune Malgache. Op. cit. 1900, pp. 17, 18.
27. ANDRÉ, E. Species des Hyménoptères d'Europe et d'Algérie. VIII. *Mutillidae*, pp. 65-144. Plates iv-vi.
This part forms fasc. 70 of the general work. Three other parts have been published during the year, cf. KIEFFER (700), MARSHALL (861).
28. —. Diagnoses d'Insectes recueillis par l'expédition antarctique belge. *Thynnidae*. Ann. Soc. ent. Belgique xliv, p. 105. [*Hymenoptera*.]
29. ANDREWS, C. W. A monograph of Christmas island (Indian ocean). London 1900, 8vo, xiii & 337 pp., 32 plates.
See BUTLER (29), HAMPSON (547), WALSINGHAM (1366), KIRBY (724), WATERHOUSE (1386), GAHAN (479), ARROW (36).
Also LEWIS describes 2 *Histeridae*.
30. ANGLAS, J. Note préliminaire sur les métamorphoses internes de la guêpe et de l'abeille. La lyocytose. C.R. Soc. Biol. lii, pp. 94-97.
31. —. Sur la signification des termes "phagocyte" et "lyocyte." T. c. pp. 219-221.
32. ANNANDALE, N. Observations on the habits and natural surroundings of insects made during the "Skeat expedition" to the Malay peninsula, 1899-1900. P. Zool. Soc. London 1900, pp. 837-869.
Condensed remarks of a similar kind appear in Rep. Brit. Ass. 1900, pp. 792, 793.
33. —. Notes on Orthoptera in the Siamese Malay States. Ent. Rec. xii, pp. 75-77, 95-97.
34. [ANON.] Notes on Insect pests from the Entomological Section, Indian Museum. Ind. Mus. Notes v, pp. 40-54.
A continuation of the work of the late E. BARLOW, q.v.
35. ARROW, G. J. On pleurostict *Lamellicorus* from Greenland and St Vincent (West Indies). Tr. ent. Soc. London 1900, pp. 175-182. [*Coleoptera*.]
36. —. Coleoptera, Clavicornia, Heteromera [in] Monograph of Christmas island [cf. ANDREWS (29)], pp. 92-96 and 105-108.
—. [See also PEEL (983).]

37. ASHMEAD, W. H. On the genera of the Chalcid-flies belonging to the subfamily *Encyrtinae*. P. U. S. Mus. xxii, No. 1202, pp. 323-412. [*Hymenoptera*.]
38. —. Classification of the Ichneumon flies, or the superfamily *Ichneumonoidea*. Op. cit. (No. 1206), pp. 1-220. [*Hymenoptera*.]
39. —. Notes on some New Zealand and Australian parasitic *Hymenoptera*, with descriptions of new genera and new species. P. Linn. Soc. N. S. Wales xxv, pp. 327-360.
40. —. Report upon the Aculeate *Hymenoptera* of the islands of St Vincent and Grenada, with additions to the parasitic *Hymenoptera* and a list of the described *Hymenoptera* of the West Indies. Tr. ent. Soc. London 1900, pp. 207-367.
41. —. Classification of the fossorial, predaceous and parasitic wasps, or the superfamily *Vespoidae*. Canad. Ent. xxxii, pp. 145-155, 185-188, 295, 296. [*Hymenoptera*.]
42. —. Some *Hymenopterous* parasites from dragon-fly eggs. Ent. News Philad. xi, pp. 615-617.
43. —. Some new exotic parasitic *Hymenoptera*. T. c. pp. 623-630.
44. AURIVILLIUS, C. Verzeichniss der von Dr F. Meinert im Jahre 1891 in Venezuela gesammelten *Cerambyciden*. Ofv. Ak. Forh. lvii, pp. 409-421. [*Coleoptera*.]
45. —. Verzeichniss einer von den Herren Missionären E. Laman und W. Sjöholm bei Mukinbungu am unteren Congo zusammengebrachten Schmetterlingssammlung. T. c. pp. 1039-1058. [*Lepidoptera*.]
46. —. *Lepidoptera* och *Coloptera* insamlade under Professor A. G. Nathorsts arktiska expeditioner 1898 och 1899, under den svenska expeditionen till Beeren Eiland 1899 och under Konservator G. Kolt-hoff's expedition till Grönland 1900. T. c. pp. 1135-1144.
47. —. Svensk Insekta fauna II. Ent. Tidskr. xxi, pp. 233-254. [*Orthoptera*.]
48. AUSTEN, E. E. How to collect *Diptera* (two-winged flies) with notes on the habits of the perfect Insects and larvæ. London, British Museum Natural History 1900, 16 pp.
—. [See also PEEL (983).]
49. AZAM, J. Description d'un *Orthoptère* nouveau de France. Bull. Soc. ent. France 1900, p. 82.
50. BACHMETJEW, P. Die Abhängigkeit des kritischen Punktes bei Insekten von deren Abkühlungsgeschwindigkeit. Zeitschr. wiss. Zool. lxvii, pp. 529-550.
51. —. Der kritische Punkt der Insekten und das Entstehen von Schmetterlings-Aberrationen. Illustr. Zeitschr. Ent. v, pp. 36 etc.
52. —. Die Variation des kritischen Punktes bei verschiedenen Exemplaren einer und derselben Insekten-Art. Soc. ent. xv, pp. 1, 2.
53. —. Das vitale Temperaturminimum bei Insekten von der Zeit. T. c. pp. 41-43, 49-52.
54. —. Lähmung bei *Lepidopteren* infolge erhöhter Temperatur ihres Körpers. T. c. pp. 89-91, 97-100, 105-110.

55. BAKER, C. F. On some American species of *Macropsis* (*Jassidae*). *Psyche* ix, pp. 55-59. [*Hemiptera-Homoptera*.]
56. —. Notes on *Clastoptera* (*Cercopidae*). *Ent. News Philad.* xi, pp. 463, 464. [*Hemiptera-Homoptera*.]
57. —. Four new species of *Platymetopius*. *Canad. Ent.* xxxii, pp. 49, 50. [*Hemiptera-Homoptera*.]
58. BALL, E. D. Some new *Jassidae* from the Southwest. *Canad. Ent.* xxxii, pp. 200-205. [*Hemiptera Homoptera*.]
59. —. Additions to the Western *Jassid* fauna. *T. c.* pp. 337-347. [*Hemiptera-Homoptera*.]
60. —. Notes on the species of *Macropsis* and *Agallia* of North America. *Psyche* ix, pp. 126-130. [*Hemiptera-Homoptera*.]
61. BANCROFT, T. L. On the metamorphosis of the young form of *Filaria bancrofti* Cobb. in the body of *Culex ciliaris* L. the "House mosquito" of Australia. *J. R. Soc. N. S. Wales* xxxiii, pp. 48-62. [*Diptera*.]
62. BANKS, N. A list of works on N. American entomology. *Bull. U. S. Dep. Agric. Ent.* xxiv, 95 pp.
Arranged systematically and therefore very useful.
63. —. New genera and species of Nearctic *Neuropteroid* insects. *Tr. Amer. ent. Soc.* xxvi, pp. 239-259.
64. —. Papers from the Harriman Alaska expedition. Entomological results (4). *Neuropteroid Insects*. P. Washington Ac. ii, pp. 465-476, pls. xxvii, xxviii.
65. —. A new genus of *Atropidae*. *Ent. News Philad.* xi, pp. 431, 432. [*Neuroptera*.]
66. —. Two new species of *Troctes*. *T. c.* pp. 559, 560. [*Neuroptera*.]
67. —. A new species of *Myrmeleon* from Texas. *T. c.* p. 596. [*Neuroptera*.]
—. [See also COCKERELL (264).]
68. *BARGMANN, A. Altes vom Fichtenborkenkäfer und neues von den Tannenborkenkäfern, mit besonderer Berücksichtigung des 1898 -er Tannenborkenkäferfrasses in Oberelsass. *Allg. Forst- u. Jagdztg.* 1899. [*Coleoptera*.]
Summary *Illustr. Zeitschr. Ent.* v, pp. 94, 95.
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(90).—BOURGEOIS (164), DESBROCHERS (816), LAJOYE, Reims (792).—PEYERIMHOFF (995), ROGER (1126).—BEDEL, *Cassida ferruginea*, Bull. Soc. ent. France 1901, p. 117.—MAYET, *Aurigena unicolor*, Bull. Soc. ent. France 1900, p. 229.—Oise, BEDEL, p. 295, Bull. Soc. ent. France 1900.—Versailles, DUBOIS, pp. 41–45, 50–53, Echange xvi.—Somme, CARPENTIER, pp. 132–135, Bull. Soc. Nord. France xv.—Loire, PIC, p. 237, Rev. Sci. Bourbonnais xiii.—Saône-et-Loire, PIC, Bull. Soc. ent. France 1900, p. 258 and p. 61, Echange xvi.—Rennes, BLEUSE, p. 81, Bull. Soc. ent. France 1900.—Auvergne, salt springs, BRUYANT & EUSÉBIO (190).—Espèces nouvelles d'insectes Coléoptères trouvées en ces dernières années dans le département de Vaucluse et dans les départements limítrophes, CHOBAUT, Mem. Ac. Vaucluse xix, pp. 215–220.—Contribution à la faune entomologique des Pyrénées orientales, MAYET, Miscell. ent. viii, pp. 49–55, etc.—Faunule des Coléoptères de la France et de la Corse, continued, DESBROCHERS, Frelon viii, pp. 1 etc. (several paginations) and ix, pp. 1–48 (double pagination).

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Lepidoptera. CHRÉTIEN (250–255), DUPONT, Normandy (353).—JOANNIS (663), TUTT (1342), WALSINGHAM (1370).—BROWN, *Nannodia eppelsheimi*, p. 295, Bull. Soc. ent. France 1900.—North France, GIARD, p. 130, Bull. Soc. ent. France 1900.—Reims, *Bembecia hyleiformis*, TUNIOT, p. 85, Bull. Soc. Reims iii, p. 85.—Muséum d'histoire naturelle d'Elbeuf. Catalogue. Classe des Insectes, ordre des Lépidoptères ou papillons (Collection française), COULON, Bull. Soc. Elbeuf xviii, pp. 1–16, sep. pag.—Paris, JOANNIS, p. 298, Bull. Soc. ent. France 1900.—Nîmes, *Thaïs cassandra*, MINGAUD, p. xxx, Bull. Soc. Nîmes 1899.—Nîmes, *Charaxes*, MINGAUD, t. c. p. xl.—Nîmes, GIARD, p. 214, Bull. Soc. ent. France 1900.—Bordeaux, BROWN, Pr.-Verb. Soc. Bordeaux lv, p. clxviii, clxix.—l'Hérault, CHRÉTIEN, p. 377, Bull. Soc. ent. France 1900.—Hautes Alpes, TUTT, pp. 228–229, Ent. Rec. xii.—Digne, ROWLAND BROWN, pp. 57–59 etc., Ent. Rec. xii.

Diptera. GADEAU (477).

Hemiptera. Hémétières recueillis à Royan et à Saint-Georges de Didonne en 1899 & 1900, LAMBERTIE, Pr.-Verb. Soc. Bordeaux lv, pp. clxix–clxxiv.

Neuroptera and *Thysanoptera*. Gironde, incl. *Thysanoptera*, DUBOIS, pp. 62–66, Feuille Natural. xxxi.

Orthoptera. AZAM (49), HOULBERT (610).—Normandy, *Bacillus gallicus*, LETACQ, Bull. Soc. Rouen xxxv, p. 157.—Sens, HOULBERT, pp. 77–85, Feuille Natural. xxx.—Loire-inférieure, DOMINIQUE (343).—Nîmes, *Blatta germanica*, MINGAUD, p. xlvi, Bull. Soc. Nîmes 1899.

(g.) *Southern Europe and Mediterranean* [see also (a.), (b.) and (f.)].

Insecta. Palencia, BARRAS, pp. 168, 169, Act. Soc. Espan. 1900.—STEFANI, Sicily (1274).—SEURAT, Tunis (1202).

Coleoptera. KRAUSS (780), PIC (1036).—ESCALERA (380, 381), FUENTE, Spain (475).—UHAGON, Spain (1346).—STIERLIN, Spain and Roumania (1284).—PIC, Spain, Algeria, Tunis (1025).—Excursions entomologiques en Corse, VODOZ, pp. 70 etc., Miscell. ent. viii.—SAHLBERG, Corfu (1144).—DODERO, Italy (337).—FLEISCHER, Italy (424).—GESTRO, Italy (496).—MEIER, Italy (884, 886).—Bologna, ALZONA, pp. 125 etc., Boll. Nat. xx.—Sui Coleotteri della provincia di Roma. Fam. Carabidae. Boll. Soc. zool. Zool. vii, pp. 18–33.—Salerno, LOPEZ, pp. 41–45.¹ Italy, Sardinia, Alpes maritimes

FORMANEK, Bosnia (441).—REITTER, Bosnia (1093).—South Dalmatia, PAGANETTI-HUMMLER, pp. 115 etc., Illustr. Zeitschr. Ent. v.—MÜLLER, Montenegro (929).—JAQUET, Roumania, pp. 392–400. Bull. Soc. Bucarest ix.—ABEILLE, Smyrna, Genoa (3).—BODEMEYER, Asia Minor (131).—WEISE, Asia Minor (1396).—CHAMPENOIS, Syria (234).—PIC, Syria (1013) and pp. 85, 86, Miscell. ent. viii.—PIC, Palestine, p. 171, Bull. Soc. ent. France 1900.—BEDEL, N. Africa (87, 89).—PIC, N. Africa (1010, 1011).—VAULOGER, N. Africa (1352).—BEDEL, Algeria (84).—BOURGEOIS, Algeria (159, 162).—CHOBAUT, Algeria (245, 246).—LEWIS, Algeria (820).—PEYERIMHOFF, Algeria (996).—PIC, Algeria (1027).—PIC, Algeria and Tunis (1024).—PIC, Syria, Algeria (1009, 1021, 1034).—PIC, Algeria, Syria, Asia Minor (1023).—THÉRY, Algeria (1318).—FAUVEL, Barbary (398).—BEDEL, Tunis (85, 86).—CHOBAUT, Tunis (244).—PIC, Tunis (1028).—WATERHOUSE, Egypt (1385).

Hymenoptera. TOSQUINET (1325 a).—DUSMET, Notas para el estudio de los *Himenópteros* de España, iii, Act. Soc. Espan. 1900, pp. 132–135.—STEFANI, Italy (1275).—JAQUET, Roumania (660).—BUYSSON, N. Africa (216).—SCHMIEDEKNECHT, N. Africa (1156).—MORICE, Algeria (926).—HANDLIRSCH, Syria (555).—MARSHALL, Tunis (862).—An excursion to Egypt, Palestine, Asia Minor, etc. in search of Aculeate *Hymenoptera*, MORICE, pp. 164–172, Ent. Mag. xxxvi.

Lepidoptera. WALSINGHAM (1368).—STAUDINGER, Spain (1267).—Valladolid, FIGUEROA, pp. 151–153, Act. Soc. Espan. 1900.—KOLLMORGEN, Corsica (755).—WALSINGHAM, Corsica (1370).—Corsica and S. France, LANG, 104–108, Entomologist xxxiii.—LANG, Corsica, *Rhopalocera*, pp. 321–323, Sci. Gossip. vi.—STEFANELLI, Italy (1273).—*Lepidoptera* of Italian lakes in October, JONES, pp. 78–80, Ent. Mag. xxxvi.—S. Italy, *Rhopalocera*, *Sphecia*, *Bombus*, *Cannaviello*, pp. 58–64, 83–87, 101, Riv. Ital. Sci. Nat. xx.—ELWES, Bulgaria (368).—Bulgarian butterflies, DE LA B. NICHOLL, pp. 29–34, 64–69, Ent. Rec. xii.—REBEL, Herzegovina (1074).—Macro-lepidoptera of Roumania, concluded, FLECK, Bull. Soc. Bucarest ix, pp. 37–142.—WALSINGHAM, Turkey in Asia (1365).—STAUDINGER, Asia Minor (1268).—KORB, Asia Minor (758).—WARREN, Syria (1376).—Ein entomologischer Ausflug nach Nordafrika; PFITZNER, pp. 69–72, Deutsche ent. Zeitschr. Lep. xiii.—CHRÉTIEN, Tunis (256).

Diptera. RICARDO (1115), STROBL, Spain (1292).—Corsica, MARSHALL, pp. 112–114, Ent. Mag. xxxvi.—MIK, Sardinia (909).—BEZZI, Italy (118).—NOË, Italy (945).—TROTTER, Italy (1328).—HENDEL, Triest (581).—STROBL, Bosnia, Dalmatia (1291).—GIARD, p. 260, Bull. Soc. ent. France 1900.—GILES, Egypt (508).

Hemiptera. REUTER, O. M. incl. Arabia (1105).—HORVÁTH, Spain (605).—MONTANDON, N. Africa (918).—REUTER, O. M., Marocco (1109).—BUFFA, Italy, *Coccidae* (194).—GUERCIO, Italy, *Coccidae* (543).

Neuroptera. Neuropteros del Montseny (Barcelona), NAVÁS, Act. Soc. Espan. 1900, pp. 92–96; del Moncayo, id. t. c. pp. 172–176; Cartagena, CACERES, t. c. p. 291.—RIBAGA, Italy (1110, 1111, 1113).—*Libellulidi* di Massa-Carrara, BENTIVOGLIO, pp. 86–91, Atti Soc. Modena xxxiii.—KLAPÁLEK, Bosnia and Hercegovina (734).—*Odonata*, RÖSSLER, Slavonia and Dalmatia (1133).—SJÖSTEDT, N. Africa, *Termitidae* (121).

Orthoptera. BOLIVAR, Spain (134).—NAVÁS, *Ortópteros* del Moncayo (Zaragoza), Act. Soc. Espan. 1900, pp. 140–144.—FREY-GESSNER, Roumania, pp. 149, 150, Bull. Soc. Bucarest ix.—BURR, Turkey (197).

Thysanura. GIARDINA, Italy (505).

Collembola. ABSOLON, Herzegovina (10).

(h.) *Caucasus and West and Central Asia, including Arabia and Socotra* [see also (a.) and (b.)]: for *Tibet* see 6.

Insecta. Addit. ad faun....Transcasp. BRANCSIK, pp. 106-134, Jahresh. Ver. Trencsin. xxx.

Coleoptera. BUYSSON, Caucasus (214).—FAUVEL, Caucasus (402).—FLEISCHER, Caucasus (425).—FORMANEK, Caucasus (440).—JACOBSON, Caucasus (640).—GAHAN, Sokotra (480).—TSCHITSCHÉRINE, W. Asia (1330).—JAKOWLEFF, Armenia and Turkestan (652).—REITTER, Turkestan (1097).—OLSOUFLEW, W. Asia and Persia (962).—RÉGIMBART, Persia (1079).—SEmenow, Persia (1198).—FAUVEL, Buchara (404).—FLEISCHER, Buchara (426).—SEmenow, Buchara (1200).—TSCHITSCHÉRINE, Buchara (1336).—WEISE, Buchara (1394).—JAKOWLEFF, Centr. Asia (657).—REITTER, Kashgar (1092).—REITTER, Centr. Asia (1096, 1100).—SEmenow, Centr. Asia (1196, 1197).

Hymenoptera. KIRBY, Arabia (723).—KIRBY, Sokotra (723).

Lepidoptera. HAMPSON, Socotra (544).—POUJADE, Persia (1051).—WALSINGHAM, Sokotra (1367).—HERZ, Centr. Asia (584).—PÜNGELER, Centr. Asia (1060).—REBEL, Centr. Asia (1073).—STAUDINGER, Thian Schan (1269).—GRUM-GRSHIMAILO, S. Mongolia (541).

Diptera. PORTCHINSKY, Transcaspian (1048).

Hemiptera. DISTANT, Arabia (324).—MELICHAR, Mongolia (891).

Orthoptera. BURR, N. Persia, p. 240, Ent. Rec. xii.—ZUBOWSKY, Turkestan (1431).

4. AFRICA ('TROPICAL & SOUTH); for NORTH AFRICA, see 3 (g.): for COMORO Is., see 5; SOCOTRA, see 3 (h.).

Insecta. CANNAVIELLO (225), PEEL (983).

Coleoptera. ABEILLE (1), BELON (93), BOURGEOIS (156, 157), BRAUNS (171), BRENSKE (177), CANDEZE (224), CLOUËT (261), CSKI (302), FAUVEL (400), GESTRO (492, 498, 499), GORHAM (512), GROUVELLE (539), HAUSER (569), HARTMAN *Curculionidae* (564), HEATH (571), HORN (600, 601), JACOBSON, Abyssinia and Galla-land (642), JACOBY (644), JAKOWLEFF (651, 653), JANSON (659), KERREMANS (691), KOLBE (747, 748, 750), KRAATZ (760, 761, 762, 764, 765, 768, 770, 771, 774, 776, 778, 779).—KRAATZ, Selteneafricanische, *Ceteniden*, Deutsche ent. Zeitschr. 1900, p. 16.—LESNE (816, 817).—LEWIS (820, 821).—OLSOUFLEW, Somaliland, *Tauronthophagus* (962); PÉRINGUEY (989), PIC (1001, 1008, 1014, 1017, 1022, 1032), ROUSSEAU (1140), SCHENKLING (1152), SCHWARZ, O. (1172, 1175), TSCHITSCHÉRINE (1331, 1332), WASMANN (1377, 1379), WATERHOUSE (1385), WEISE (1395, 1397, 1401, 1402).

Hymenoptera. BUYSSON (217, 219), FRIESE (450, 455), HANDLIRSCH (556, 558), KOHL (741, 742), MAYR (876), SAUSSURE (1149).

Lepidoptera. AURIVILLIUS (45), BUTLER (209), BUTLER, Nyasaland *Rhopalocera*, pp. 59-63, Ann. Nat. Hist. v.—DISTANT, Pemba island (331); FAWCETT (406), GROSE-SMITH (527, 531), HAMPSON (544, 545, p. 228, 548), JOANNIS (664), KARSCH (673, 675, 676, 678, 679), MABILLE (843), QUAIL (1061), ROTHSCHILD & JORDAN (1137), SHARPE (1213), SOUTHONNAX (1264), WARREN (1374).

Diptera. GILES (508), RICARDO (1115, 1116), THEOBALD (1314), WASMANN (1378).

Aphaniptera. ROTHSCHILD (1135).

Hemiptera. COCKERELL *Coccidae* (983).—DISTANT (322, 324, 326, 329), KIRKALDY (727, 732), KUHLGASS (920), NEWSTEAD *Coccidae* (938).

Neuroptera. KARSCH (674), KIRBY *Odonata* (719), KIRBY (721), KOLBE (749), R. MARTIN *Odonata* (865), SJÖSTEDT *Termitidae* (1221), SJÖSTEDT *Odonata* (1222).

Orthoptera. BORELLI (151), BORMANS (152), BRANCSIK (168), BURR (197, 199), KARSCH (677), KIRBY (720), DISTANT (321), DOMINIQUE (345), SJÖSTEDT (1223).

5. MADAGASCAR, including SEYCHELLES and MASCARENE IS.

Coleoptera. ALLUAUD (22, 23, 24, 25), BRENSKE (177), CANDÈZE (224), CLOUËT (262), CSIKI (302), FAIRMAIRE (391, 394, 395, 396), FLEUTIAUX (429), HORN (600), JACOBY, p. 266, P. Zool. Soc. London 1900; JAKOWLEFF (653), KERREMANS (691), KOLBE (748), KRAATZ (761, 769, 775), MAINDRON (848), RÉGIMBART Aldabra island (1078); SCHWARZ, O. (1173, 1174), TSCHITSCHÉRINE (1331), TSCHITSCHÉRINE incl. Comores (1334).

Hymenoptera. DU BUYSSEN (217, 218), FOREL Réunion (437 Appendix), FRIESE (449, 455), SAUSSURE (1149).

Lepidoptera. HAMPSON (544), JOANNIS Réunion (661), KARSCH (680), MABILLE (842), MABILLE Madagascar and Comores, Mauritius (843), SONTTHONNAX (1254).

Diptera. LAVERAN (800).

Aphaniptera. ROTHSCHILD (1135).

Hemiptera. HORVÁTH (606), MONTANDON (920).

Odonata. R. MARTIN (865).

Orthoptera. BORMANS (152), HANCOCK (553).

6. TROPICAL and EASTERN ASIA, with JAPAN.

For outskirts see also 3 (a.), (g.), (h.). ARABIA see 3 (h.).

N.B. In this division, 6, every paper that refers to India or Japan is pointed out by means of these names.

Insecta. KIRBY (722).

Coleoptera. ABEILLE Ceylon (2); BRANCSIK W. Asia (167); BRENSKE Ceylon (178); BRENSKE Siam (180); BRENSKE India (182), CANDÈZE incl. India and Tibet (224); CLOUËT Burma (260); CSIKI Malacca (298); CSIKI India, Singapore (302); DODERO Burma (336); FAIRMAIRE China, Formosa (389); GESTRO India (497, 499); GAHAN Hainan Island (482); GAHAN Formosa (481); HAUSER India (568); HORN incl. India (600); HORN India, Burma (601); JACOBY India (645); JAKOWLEFF Setschuen (649); JAKOWLEFF Cochin China (650); JAKOWLEFF China (651); KERREMANS (691), KERREMANS India (693); KRAATZ Tonkin (772); LEWIS (821), LEWIS incl. India (820); OHAUS (954), OHAUS Ceylon (955); OLIVIER India (959); PIC (1018), PIC Tenasserim (1014); PIC China and Japan (1015); PLANET India (1039, 1040), RAFFRAY India (1071); REITTER Tibet (1090); ROESCHKE Tsushima (1125); SCHENKLING Japan (1152); SCHILSKY Japan (1154); SCHWARZ, O. (1174), SEMENOW Setschuen (1192); SEMENOW China Manchuria (1194); THÉRY Chida (1319); TSCHITSCHÉRINE (1331), WATERHOUSE Hainan Island (1383); WEISE Ceylon and India (1400), Japan (1394).

Hymenoptera. ALFKEN Japan (16, 18); DU BUYSSEN (217), CAMERON incl. India (221); CAMERON Japan and India (222); FOREL India (435, 486); FOREL Burma (437, appendix); FOREL Japan (438); FRIESE Malacca (455); FRIESE China (457); SZÉPLIGETI India (1304).

Lepidoptera. BUTLER Perak, Siam (210); CROWLEY Hainan (297); DUDGEON India (352); GRUM-GRSHMAILO E. China & S. Mongolia (541); HAMPSON (544), HAMPSON incl. China (545); HEYLAERTS Japan (586); JOANNIS Tonkin (662); MATSUMURA Japan (867); LATHY (798), LEECH

China, Japan, Corea (807); MOORE India etc. (923); NICEVILLE (942); ROTHSCHILD India (1136); STRECKER Siam (1289); SWINHOE (1298, 1299); TETENS Malacca (1312); WALSINGHAM incl. Japan (1365); WARREN incl. Japan (1375).

Diptera. BECKER Singapore (82); GILES India (508); KIEFFER & TROTTER China (709); STEIN Singapore (1279).

Hemiptera. BREDDIN (174), BREDDIN Malacca (176); BUCKTON India (192, 193); COCKERELL Japan, *Coccidae* (280); DISTANT (322, 323, 324, 325, 328, 330), DISTANT incl. Japan (327); GREEN India, *Coccidae* (525).—List of known Indian *Coccidae*, GREEN (524); GREEN Ceylon, *Coccidae* (523); JAKOWLEFF China (656); KIRKALDY Ceylon (733); LEONARDI Ceylon, *Coccidae* (814); MATSUMURA (868); NEWSTEAD India, *Coccidae* (940).

Neuroptera. FOERSTER (431), KIRBY Hainan (717); R. MARTIN India (865); MORTON Japan and India (928).

Orioptera. BOLIVAR India (133); BORMANS Pulo Penang (152); BURR India (197, 199).

7. ASIATIC ARCHIPELAGO, including PAPUA (for islands beyond Papua see 2. INSULAR).

N.B. In this division, 7, when the name of an island, or islands, is mentioned this indicates that the paper refers *only* thereto.

Insecta. ANDREWS Christmas Island (29); HANITSCH Kina Balu (561). Java ZEHNTNER (1424-1430).

Coleoptera. BOURGEOIS (158), BRENNEKE Sumatra (179); CANDÈZE (224), CSIKI (298), CSIKI Java (301); CSIKI New Guinea (299, 302); CSIKI Sumatra, New Guinea (300); FAIRMAIRE Borneo (392, 393); FAUVEL Sumatra (400 p. 70 note); GESTRO Java (497); GORHAM (513), GROUVELLE & LÉVEILLÉ Sumatra (540); HARTMANN Sumatra (565); HARTMANN New Guinea (566); HELLER (573, 574), HORN (600), HORN New Guinea (601); JACOBY (646), JAKOWLEFF (650), KERREMANS (691, 693), KERREMANS Sumatra (692); KOLBE Borneo (751); KRAATZ Key Is. (763, 764); KRAATZ Sumatra (777); KRAATZ New Guinea (773); LESNE Sumatra, *Bostrichides*, Ann. Soc. ent. Belgique xliv, p. 149; LEWIS (820, 821), OHAUS (954), OLIVIER Sumatra (958); OLIVIER Borneo (960); PIC (1004, 1005); PIC Sumatra (1000, 1031); PIC N. Guinea (1002, 1003); RÉGIMBART Sumatra (1081); SCHWARZ, O. (1174), SCHWARZ, O. Sumatra (1170); SHARP Java (1208); SPAETH Sumatra (1259); TSCHITSCHÉRINE (1331), TSCHITSCHÉRINE Java (1332); WEISE Philippines (1402 p. 448).

Hymenoptera. ALFKEN Java (20); EMERY (371, 375, 376), FOREL Sumatra (436); FOREL Borneo (437 appendix); MANTERO (851), MANTERO Celebes (850); MOCÁRY New Guinea (914); SZÉPLIGETI New Guinea (1302); SZÉPLIGETI Celebes (1304); ZEHNTNER Java (1429).

Lepidoptera. BUTLER Timor (210); FRUHSTORFER Philippines (471); GROSE-SMITH (527), GROSE-SMITH Celebes (528); GROSE-SMITH New Guinea (529, 530); HAMPSON (544), HOLLAND Buru (595); MOORE Borneo (923); NICEVILLE (942), PIEPERS & SNEELLEN Java (1038); RÖBER (1122), ROTHSCHILD (1136), SEMPER Philippines (1201); SNEELLEN (1250), SNEELLEN Java and Celebes (1249); SWINHOE (1298, 1299), WALSINGHAM Java, p. 179, Ent. Mag. xxxvi; WARREN (1375).—General discussion of the distribution of *Rhopalocera* in the Malay Archipelago, PAGENSTECHER (974).

Diptera. GILES Java (508); KERTÉSZ (695), KERTÉSZ New Guinea (696, 697); SPEISER (1262), SPEISER Sumatra (1260); SPEISER New Guinea (1264); STEIN (1278), STEIN New Guinea (1279).

Hemiptera. BREDDIN (172, 174, 175, 176), BREDDIN Sumatra (173); DISTANT (328), DISTANT Java (325).—Philippines, Lombok, DISTANT (327); HORVÁTH (606, 607), KIRKALDY (728), MONTANDON (917, 920).

Neuroptera. FÖRSTER New Guinea (432); KARSCH (672); Borneo McLACHLAN (876).

Orthoptera. BORMANS (152), BURR (199), BURR Borneo (198).

8. AUSTRALIA and TASMANIA (for NEW ZEALAND see 2. INSULAR).

Insecta. ILLIDGE (634).

Coleoptera. BLACKBURN (123, 124, 125), CANDÈZE (224), CSIKI (302), HELLER (574), KERREMANS (691), KRAATZ (773), LEA (802, 803), LEWIS (820), RAFFRAY (1070), SCHENKLING (1152), SLOANE (1233, 1234).

Hymenoptera. ASHMEAD (37, 39), EMERY (371), FOREL (437), FROGGATT (466), MOCSÁRY (914), TURNER (1339).

Lepidoptera. Gisborne and Macedon, HAASE, pp. 22–24, Victorian Natural. xvii.—HAMPSON (544, 545, p. 230), LOWER (828, 829), LYELL Tasmania (841); LUCAS (832), SWINHOE (1298, 1299), TURNER (1338), WARREN (1375), WATERHOUSE (1387).

Diptera. COQUILLET (289), FROGGATT (468), GILES (508), RICARDO (1115).

Aphaniptera. ROTHSCHILD (1135).

Hemiptera. BREDDIN (174, 175), DISTANT (322, 324, 327), FROGGATT (461), FROGGATT, *Coccidae* (462); GREEN, *Coccidae* (521, 522); HORVÁTH (606, 607).

Neuroptera. WASMANN *Termitidae* (1070).

Orthoptera. FROGGATT (463).

9. NORTH AMERICA. Bahamas and Bermudas, see Antilles.

Insecta. COCKERELL & others (264); COCKERELL Arizona and New Mexico (263); GODMAN (511), FLETCHER Canada (428); SMITH New Jersey, 8,537 species (1235); Additional list of Insects taken in Alpine region of Mount Washington, SLOSSON, pp. 319–323, Ent. News Philad. xi.—Insects of the West (chiefly Colorado desert), COQUILLET & ORCUTT, West Amer. Scient. xi, pp. 49–54.

Coleoptera. CASEY (229), FALL (397), HAYWARD (570), HORN (603), KERREMANS (691), LEWIS (820), PIC (1031), RIVERS (1121), SCHWARZ, E. A. Alaska (1169); WASMANN (1377), Quebec *Cicindelidae*, BEAULIEU, pp. 136 etc. Natural. Canad. xxvii; *Scarabaeidae* id. t. c. p. 166 etc.—Northfield, Massachusetts, BOWDITCH, pp. 392–395, Ent. News Philad. xi.—Central Illinois, WOLCOTT, p. 468, Ent. News Philad. xi.—Breckenridge and Peak Eight, WICKHAM, pp. 597–600, Ent. News Philad. xi.—The *Cicindelidae* of Kansas, KNAUS, pp. 109–116, Canad. Ent. xxxii.—Phoenix, Arizona, GRIFFITH, pp. 561–570, Ent. News Philad. xi.

Hymenoptera. ASHMEAD (37, 42, 43), BASSETT (76), COCKERELL (270, 271, 273, 276–279), DYAR (355), FOREL (438), FRIESE (451, 452), HARRINGTON (563), KINCAID (713), KINCAID Alaska (712), KINCAID Alaska *Tenthredinidae* (710); MACGILLIVRAY (845), PERGANDE Alaska (988); ROBERTSON (1123), SZÉPLIGETI (1304), TITUS (1324), WHEELER Texas (1409).—New England, Ants, WHEELER, p. 47, Biol. Bull. ii.

Lepidoptera. BARNES (70, 71), BEUTENMÜLLER (115, 116), BUSCK (205, 206), DIETZ (318), DODGE (338), DYAR (356, 361, 363, 364, 365), DYAR Alaska (360); FERNALD (416), FRENCH (446), GROTE (538), HAMPSON

(544), HOLLAND Alaska (596); HULST (623, 624, 625, 626), MURTFELDT (932), SKINNER (1225), SMITH (1236, 1237, 1238, 1239, 1240), SNYDER (1253), STRECKER (1289), WARREN Florida (1376).—Yukon, *Rhopalocera*, LYMAN, p. 119, Canad. Ent. xxxii.—Some interesting moths taken at Ottawa, GIBSON, pp. 13-19, Ottawa Natural. xiv.—Manitoba, HEATH, pp. 93-96, Canad. Ent. xxxii.—Additions to the list of Manitoba butterflies, with notes on other species, HANHAM, pp. 365-367, Canad. Ent. xxxii.—The hawk and bombycine moths of New Brunswick. Introductory list, MCINTOSH, pp. 301-302, Bull. Soc. New Brunswick xix.—Silver Lake, Utah, SNYDER, pp. 363-368, Ent. News Philad. xi.—Louisiana, *Catocala*, DODGE, p. 433, Ent. News Philad. xi.—DYAR, *Dichogama*, Canad. Ent. xxxii, p. 271.—TROSCHEL, *Cocytius cluentius*, Ent. News Philad. xi, p. 324.—*Blastobasis sequella*, not N. American, WALSINGHAM, p. 179, Ent. Mag. xxxvi.

Diptera. CHAGNON Quebec (233); COCKERELL (268, 269), DOANE (333), FRENCH (447), GILES (508), HOWARD (612), JOHNSON (665, 666), COQUILLETT (288, 291, 292, 293, 294, 616), COQUILLETT Alaska (290); KELLOGG (683, 685), MELANDER (889), MELANDER & BRUES (890), SNOW & MILLS (1252), WEBSTER (1388), WHEELER (1410).—Ottawa *Diptera*, HARRINGTON, pp. 127-135, Ottawa Natural. xiv.

Hemiptera. BAKER (55, 57), BALL (58, 59, 60), BOGUE, *Coccidae* (132), CAUDELL (230), COCKERELL (279), COCKERELL, *Coccidae* (282), DOANE *Aphidae* (334); EHRHORN, *Coccidae* (367); HEIDEMANN (572), HUNTER (628), JOHNSON, *Aphidae* (667); KING, *Coccidae* (714, 715, 716); OSBORN (967, 969, 970, 971), PERGANDE, *Aphidae* (986); PERGANDE Alaska, *Aphidae* (987); QUAINTEANCE, *Aleyrodidae* (1065); TINSLEY & COLLEGE *Coccidae* (1322).—New Mexico, food-plants, COCKERELL, p. 302, Entomologist xxxiii.—Miscellaneous notes on *Coccidae* from Western Massachusetts, KING, pp. 116-118, Psyche ix.

Anoplura. OSBORN (968).

Neuroptera. BANKS (63, 65, 66, 67), BANKS Alaska (64); TOUGH (1327), WILLIAMSON (1417).—Alaska *Mallophaga*, KELLOGG & KUWANA (686).—Indiana *Odonata*, WEITH, p. 641, Ent. News Philad. xi.—Arkansas, *Odonata*, ADAMS, pp. 621, 622, Ent. News Philad. xi.—Dragon-flies of the province of Quebec, FYLES, pp. 52-57, Rep. ent. Soc. Ontario 1900.—Maine, *Myrmeleon immaculatum*, PACKARD, p. 95, Psyche ix.

Orthoptera. BLATCHLEY (126), HUNTER & SUTTON Kansas (629); McNEILL (880, 882), SCUDDER Catalogue (1176); SCUDDER (1177, 1178-1181, 1183, 1184, 1185); SCUDDER & HENSHAW (1182), WHEELER (1412).—CAUDELL Alaska, P. Washington Ac. ii, p. 511.—SCUDDER, *Mantis religiosa*, Psyche ii, p. 119.—SCUDDER, localities for Western *Tryxalinae*, Psyche ix, p. 95.

Thysanura. Maine, *Machilis variabilis*, PACKARD, p. 107, Psyche ix.

Collembola. HARVEY (567).

10. CENTRAL AMERICA (MEXICO to PANAMA incl.).

Insecta. GODMAN (511).

Coleoptera. CANDÈZE (224), CASEY (229), GOHHAM (513), JACOBY (647), KERREMANS (691, 694), L'VEILLÉ (818), LEWIS (820), MATTHEWS (870), PIC (1016), SCHENKLING (1152, 1153), SCHWARZ, O. (1174), TSCHITSCHÉRINE (1331, p. 465).

Hymenoptera. ASHMEAD (37), COCKERELL (279), FRIESE (450, 451, 452, 455), SZÉPLIGETI (1304).—On a small collection of bees from Juarez, Entomologist xxxiii, pp. 217, 218.

Lepidoptera. DRUCE (348), HAMPSON (544), MARSHALL

(1151), SNELLEN (1250), STRECKER (1289), WARREN (1376).—*Tropaea* n. sp. cf. *Bombyces*.—NICARAGUA, BUTLER, pp. 189–191, Entomologist xxxiii.

Diptera. COQUILLETT (288).

Hemiptera. BAKER (56), BALL (60), CHAMPION (235), DISTANT (325, 328), OSBORY (967).

Neuroptera. BANKS, *Psocidae*, *Planipennia*, *Trichoptera* (63).—MCLACHLAN, *Odonata*, p. 189, Ent. Mag. xxxvi.

Orthoptera. BALL (59), BOLLEY (122), BURR (197), HANCOCK (552), MCNEILL (880), REHN (1088), SCUDDER (1176, 1179).

11. ANTILLES, including BERMUDAS, BAHAMAS.

Insecta. GODMAN (511).

Coleoptera. ARROW (35), CASEY, Cuba (229); CASEY, Bahamas (229, p. 67 etc.).

Hymenoptera. ASHMAD (37).

Lepidoptera. DRUCE (348), HAMPSON (544), SCHAUER, St Lucia (1151); SHARPE, Bahamas (1214); WARREN, including Bahamas (1376).

Diptera. COQUILLETT, Puerto Rico (288); SPEISER, Cuba (1261).

Hemiptera. BALL (60), DISTANT (325), KIRKALDY, Jamaica (731); OSBORN (967).—Puerto Rico *Coccoidea*, PERGANDÉ & COCKERELL, pp. 92, 93, Bull. U. S. Dep. Agric. Ent. xxii.

Orthoptera. HANCOCK, Hayti (552).

12. SOUTH AMERICA, including TRINIDAD.

Insecta. GODMAN (511).

Coleoptera. ARROW, TRINIDAD (35); AURIVILLIUS (44), BERG, ARGENTINA (100); BOURGEOIS (157, 160), BOURGEOIS, Patagonia (155); BRENSKE, Patagonia (181); BRÈTHES (183), CANDÈZE (224), FAIRMAIRE, Patagonia (390); FAUVEL, inc. Chili (399); GERMAIN, Chili (491); GORHAM (513), HORN (600, 601, 602), JACOBY (647, 648), JAKOWLEFF (649, 650), KERREMANS (691, 694), KRAATZ (767), LAMEERE, Patagonia (795); LÉVEILLÉ (818), LEWIS (820, 821), OHAUS (956, 957), PIC (1006, 1014, 1016, 1018, 1019, 1020, 1021), PIC, Chili (1032); RAFFRAY (1071), RÉGIMBART (1080), ROUSSEAU, Patagonia (1138); SCHENKLING (1152, 1153), SCHWARZ, O. (1174), SPAETH (1258), TSCHITSCHÉRINE (1331), WASMANN (1377), WATERHOUSE (1384), WEISE (1398, 1403).

Hymenoptera. ANDRÉ, Patagonia (28); ASHMEAD, incl. TRINIDAD (37); BERG, Tierra del Fuego (99); BUYSSON (217), COCKERELL (274), FOREL (438 p. 285), FRIESE (451, 452, 453, 455, 456, 458), FRIESE, including Chili (450); HOWARD, Chili (614); KRIECHBAUMER (783), SZÉPLIGETI (1304); TOSQUINET, Patagonia, Argentina (1326).

Lepidoptera. DANNATT (311), DOGNIN (340, 341), DRUCE (348, 349), GROSE-SMITH (527), HAMPSON (544), RIFFARTH (1118), SCHAUER (1151), SNELLEN, incl. Chili (1250); STAUDINGER (1271), STRECKER (1289), WARREN (1376).

Diptera. BECKER (82), HUNTER, Catalogue (630); JACOBS, Patagonia, Argentina (639); RICARDO (1117), RICARDO, incl. Chili (1115); v. RÖDER (1124), SPEISER (1261), STEIN (1280).

Hemiptera. BAKER (55, 57), BERG (97), BERG, Chili (102); MONTANDON (917, 920), COCKERELL, *Coccoidea* (284, 285, 286); HEMPEL, *Coccoidea* (576, 577, 578); TINSLEY & COLLEGE, TRINIDAD, *Coccoidea* (1322).

Neuroptera. THERESE VON BAYERN (1317), ENDERLEIN, *Psocidae* (377, 378).

Orthoptera. BERG (101), BORMANS (152), BRUNNER, Patagonia *Steno-*

pelmatidae (186); BRUNNER, Tierra del Fuego (187); BURR (197, 199), GIGLIO-TOS (507), HANCOCK (551), THERESE VON BAYERN (1317).

Thysanura. SILVESTRI (1216).

Collembola. WAHLGREN, Patagonia (1362).

PALÆO-ENTOMOLOGY.

Some American fossil (tertiary) *Coleoptera* referred to *Scolytidae*, HOPKINS (599).

Coleoptera Bembidium berendti from preglacial peat, LAUENBERG, MEUNIER (901), n. sp.

Hymenoptera. Two new genera of *Myrmidae* from copal described without names, MEUNIER (902).—*Myrmidae* in amber and copal, MEUNIER pp. 362–366, Bull. Soc. ent. France 1900 (903).

Diptera. *Palaeosynapha* n. g. *Mycetophilidae* near *Synapha*—no sp. mentioned—in amber, MEUNIER (900).—The genera of *Mycetophilidae* found in amber, MEUNIER (905).

Hem. Heteroptera. The spp. of *Naucoris* of Oppenheim discussed, MEUNIER (904).

Palaeoheteroptera n. g. *Nepidae*, for *Naucoris carinata* OPP. No. 409, MEUNIER (904).

Palaeonepidoidea n. g. *Nepidae* for *Naucoris carinata* OPP. No. 41 id. (904).

III. SYSTEMATIC.

N.B.—The reference numbers collected under the headings of the various groups refer to "Titles" on pp. 5–81, and are intended to give, in each case, a complete list of all memoirs containing anything of importance in connection with the group.

Classification of Insects, *Archipteres*, *Rhynchotes*, *Schizothoraciques*, *Zygo-thoraciques*, LAMEERE (794).

The ocelli of Insects, REDIKORZEW (1076).

Homologies of bases of leg, WALTON (1372).

Determination of sex, CUENOT (304).

Aetiology of coloration, BRUNNER (189).

List of mites found on insects, and of Insects inhabited by mites, with names of the mites LEONARDI (815).

(A.) COLEOPTERA.

Classification: 3 suborders, *Cantharidiformes*, *Staphyliniformes*, *Carabiformes*; the series and families, LAMEERE (793).

Some notes on phylogeny, PEYERIMHOFF (997).

Number of Malpighian tubes and their value in classification, PEYERIMHOFF (998).

For notes on the earlier stages of numerous species of a variety of families, see XAMBEU (1420). These are not recorded in detail below.

Intimate metamorphosis of a beetle, NEEDHAM (936).

Anatomy of testes, BORDAS (143).

The male sexual glands and accessory organs, BORDAS (144, 145).

Ovipositor, anatomy, SEURAT (1204).

The wings of Coleoptera; *Clavicornia*, *Brachymeri*, *Hygrophili*, KEMPERS (687).

Stridulating organs, GAHAN (478).

Odoriferous organs, BRANDES (170).

Cases of malformation and their origin, TORNIER (1325).

Spinning beetles, KEW, pp. 168–170, Sci. Gossip vii.

CICINDELIDÆ.

[Cf. ALLUAUD (22), BERG (98), BORDAS (144), CSIKI (303), FAIRMAIRE (395), HORN (600–604).]

Cicindelida divided into "Alocosternaliae" and "Platysternaliae," HORN, p. 214, Ent. Nachr. xxvi.

For extensive notes on variation of *Cicindelida* with numerous suggestions for the suppression of supposed species and other synonymy, see HORN, t. c. pp. 214–218.

Cicindelida of Hungary (in Hungarian), CSIKI (303).

Cicindelida of Kansas, notes on localities, etc., KNAUS, pp. 109–116, Canad. Ent. xxxii.

Stridulating organ of *Orychella*, GAHAN (478).

Cicindelida frequenting termitaria in S. America, BERG (98).

Cicindela anthracina, characters, p. 116, *hyperborea* and *limbata* distinguished, p. 117, *varians*, characters, p. 118, HORN, Ent. Nachr. xxvi; *C. silvicola*, *maura*, varr. SCHULZ, p. 159, t. c.; *C. melancholica*, subsp. *albomarginalis*, *C. kaleea* subsp. n. *humeralis*, p. 205, *C. neumannii* subsp. n. *pseudosoa*, p. 208, HORN, Deutsche ent. Zeitschr. 1900; *C. flexuosa*, burrows, natural history, PONSELLE (1046).

C. (Chetostyla) andriana, Madagascar, ALLUAUD, p. 18, Bull. Soc. ent. France 1900; *C. horni*, Madagascar, FAIRMAIRE, p. 134, t. c.; *C. declivis*, New Guinea, HORN, p. 364, Deutsche ent. Zeitschr. 1900; *C. pseudosenilis*, California, HORN, p. 117, Ent. Nachr. xxvi; *C. io*, N. Guinea, p. 203, *bouchardi*, Sumatra, p. 204, *waterhousii*, Ceylon, p. 206, *putzeysi*, Angola, *circumpictoides*, N. Zealand ?, p. 207, *laticornis*, E. Africa, p. 208, *C. (Calochroa) angulicollis*, Dacca, p. 209, HORN, Deutsche ent. Zeitschr. 1900 : n. spp.

Ctenostoma simpliciceps, Rio Janeiro, HORN, p. 361, Deutsche ent. Zeitschr. 1900, n. sp.

Euryoda waageni, Soudan, p. 198, *bucephala*, Madagascar, p. 199, *reconciliatrix*, Tenasserim, p. 200, HORN, t. c. : n. spp.

Heptodontia arrowi, Burma, HORN, p. 362, t. c. n. sp.

Myrmecoptera micans, Transvaal, HORN, p. 210, t. c.; *M. batesi*, E. Africa, HORN, p. 363, t. c. : n. spp.

Odontochila pentacomioidea, p. 202, *cyaneomarginata* (Chaud.), p. 203, Brazil, HORN, t. c. : n. spp.

Orychila haenschi, p. 364, *affinis*, p. 365, Ecuador, HORN, t. c. : n. spp.

Oxygonia uniformis, Ecuador, HORN, p. 201, t. c. n. sp.

Pogonostoma laporti, Madagascar, HORN, p. 193, t. c.; *P. vestitum*, p. 134, *perrieri*, p. 135, Madagascar, FAIRMAIRE, Bull. Soc. ent. France 1900 : n. spp.

Tetracha steinheili, Peru, HORN, p. 211, Deutsche ent. Zeitschr. 1900; *T. suturalis*, p. 53, *camposi*, p. 54, Ecuador, HORN, Ent. Nachr. xxvi : n. spp.

Therates rugulosus, Sumatra, p. 194, *kraatzii*, Penang, p. 195, *gestroi*, Lakhon, p. 196, *maindroni*, Borneo, p. 197, *waagenorum*, Darjiling, p. 198, HORN, Deutsche ent. Zeitschr. 1900 : n. spp.

Tricondyla (Derocrania) halyi, p. 193, Ceylon, *longesulcata*, S. India, p. 194, HORN, t. c.; *T. gounelli*, S. India, HORN, p. 361, t. c. : n. spp.

CARABIDÆ.

[The following memoirs relate to *Carabidæ*, viz.:—ALLUAUD (24, 25), BEDEL (84, 85, 86), BLACKBURN (123), BORDAS (124), BRANCSIK (167), DIERCKX (317), DODERO (335), FAIRMAIRE (394), FLEISCHER (425), GAHAN (478), GANGLBAUER (131, 486, 488), GESTRO (495), HAYWARD (570), HELLER (573), JACOBSON (642), KINCAID (711), MAINDRON (848), MALLÁSZ (849), MEUNIER (901), PIC (1031), REITTER (1090, 1095, 1101, 1102), RIVERS (1121), ROESCHKE (1125), ROUSSEAU (1139), SAHLBERG (1143, 1144), SCHWARZ (1169), SEMENOW (1191 to 1196), SHARP (1211), SLOANE (1233, 1234), TSCHITSCHÉRINE (1330 to 1336), WEBSTER (1389), XAMBEU (1420).]

Classification of *Harpalini*, and revision of the palæarctic genera, SEMENOW, Horæ Soc. ent. Ross. xxxiv, pp. 335–370.

Tables of the palæarctic *Harpalini*, REITTER, Verh. Ver. Brunn. xxxviii.

Revision of the European blind *Bembidiidae*, GANGLBAUER (486).

Stridulating organs of *Cyphus blethisa*, GAHAN (478).

Abacetus impressicollis (Dej. as *Distrigus*)—(*dostojevskii* Tsch.), p. 273, *A. perciosoides* Fairm. = (*gagutinellus* Kollbe), p. 275, *salamensis* K. = (*kenigi* Tsch.), p. 276, TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv.

A. insularis, Comoro islds, p. 571, *exul*, Madagascar, p. 572, TSCHITSCHÉRINE, t. c.; *A. tridens*, p. 156, *babitschewi*, p. 158, *micros*, p. 159, E. Africa, *spurius*, Java, p. 160, TSCHITSCHÉRINE, op. cit. xxxiii; *A. anthracinus*, p. 273, *orientalis*, p. 276, *idiomerus*, p. 278, E. Africa, *ornatus*, p. 279, *pictus*, Tonkin, *spectus*, Madagascar, p. 281, *olivaceus*, Cape Colony, p. 282, *chalcopterus*, p. 283, *eratus*, Tonkin, *capicola*, S. Africa, p. 284, *nitidus*, Obock, p. 286, *nitidulus*, p. 287, *infimus*, p. 288, Madagascar, *rufescens*, Cape Colony, *longulus*, Tonkin, p. 289, *picezens*, Cochin China, p. 290, TSCHITSCHÉRINE, op. cit. xxxiv : n. spp.

Acupalpus immundus, S. Europe, p. 138, *boops*, Cairo, p. 140, REITTER, Verh. Ver. Brunn. xxxviii; *A. boops*, Cairo, SAHLBERG, p. 182, Ofv. Finska Forh. xlvi; *A. (Egudroma) vauologeri*, Tunis, BEDEL, p. 247, Bull. Soc. ent. France 1900 : n. spp.

Adrimus affinis, Venezuela, p. 245, *aeneans*, Para, p. 246, TSCHITSCHÉRINE, Horæ Soc. ent. Ross. xxxiv, n. spp.

Amara famelica var. n. *nivium*, TSCHITSCHÉRINE, p. 328, Bull. Soc. ent. France 1900.

Anatrichis sexstriatus, Australia, SLOANE, p. 560, P. Linn. Soc. N. S. Wales xxiv, n. sp.

Anchomenus gracilis Gyll. = (*Agonum oblongum* Dej.), p. 247, *A. thoreyi* Dej. = (*melanocephalus* Dej.), p. 248, BEDEL, Bull. Soc. ent. France 1900.

Anillus abnormis, Corfu, SAHLBERG, p. 137, Verh. Ges. Wien I, redescribed p. 180 Ofv. Finska Forh. xlii, n. sp.

Anisodactylus nemorivagus var. n. *atipes*, GANGLBAUER, p. 138, BODE-MEYER (131).

Anopthalmus, Venetian species, GESTRO, p. 567, Ann. Mus. Genova xl.

A. gestroi, Apennines, DODERO, p. 400, t. c.; *A. fabianii*, Venice, GESTRO, p. 570, t. c. : n. spp.

Antarctia referred to *Platyomatini*, TSCHITSCHÉRINE, p. 674, Horæ Soc. ent. Ross. xxxiv.

A. racovitzai, *subamaroides*, Patagonia, ROUSSEAU, p. 108, Ann. Soc. ent. Belgique xliv, n. spp.

Antarctobiun subg. n. of *Platysema*, for *P. magellanicum* Bl., TSCHITSCHÉRINE, p. 460, Horæ Soc. ent. Ross. xxxiv.

Aristus curtangulus, Syria, p. 46, *subconstrictus*, *lucidus*, W. Asia, p. 47, REITTER, Verh. Ver. Brunn. xxxviii, n. spp.

- Arsenoxenus nitescens*, Borneo or Sumatra, Tschitschérine, p. 475, Horae Soc. ent. Ross. xxxiv.
- Asmerinx krauthi*, Tyrol, Ganglbauer, p. 577, Verh. Ges. Wien I, n. sp.
- Bedeliolus* n. g. near *Pogonus*, p. 577, for *B. vigil*, Transcaspian, p. 579, *pernix*, E. Persia, p. 582, n. spp., SEMENOW, Horae Soc. ent. Ross. xxxiv.
- Bembidium tropicum* var. *abyssinicus*, Cannaviello, p. 300, Bull. Soc. ent. Ital. xxxii.
- B. islandicum*, Iceland, Sharp, p. 254, Ent. Mag. xxxvi; *B. (Chlorodium) alnum*, Transcaspian, p. 174, *B. (Peryphus) giganteum*, Turkestan, p. 175, *amnicola*, Amu Daria, *B. (Lopha) albomaculatum*, Alatau, p. 177, SAHLBERG, Ofv. Finska Forh. xlvi; *B. berendti*, n. sp. near *exoletum* Scudd., see Palaeoentomology, p. 167 : n. spp.
- Blechrus*; revision, REITTER, pp. 369–380, Deutsche ent. Zeitschr. 1900.
- B. binotatus*, Egypt, p. 373, *fissuralis*, Greece, etc., p. 376, *fulvibasis*, *politus*, Caucasus, p. 377, *cordatus*, Istria, p. 378, *longulus*, East Siberia, p. 379, REITTER, t. c.; *B. schmiedeknechti*, Jericho, PIC, p. 91, Echange xvii : n. spp.
- Bothynoprotus* n. g. *Euchroini*, p. 453, for *B. mattoensis*, n. sp., Brazil, p. 454, Tschitschérine, Horae Soc. ent. Ross. xxxiv.
- Bradyccylus koltzei*, Tibet, REITTER, p. 133, Verh. Ver. Brunn. xxxviii, n. sp.
- Broscosoma moriturum*, Setschuen, SEMENOW, p. 83, Horae Soc. ent. Ross. xxxiv, n. sp.
- Broscus anomalus* cf. *Chatobroscus*.
- Calosoma*, examination of numerous types, synonymy, ROESCHKE (1125).
- C. glasunovi*, Turkestan, p. 303, *anthrax*, Mongolia, p. 304, *grumi*, China, p. 306, SEMENOW, Horae Soc. ent. Ross. xxxiv; *C. grandidieri*, Madagascar, MAINDRON, p. 16, Bull. Mus. Paris 1900 : n. spp.
- Carabops* n. g. p. 261, for *C. kachovskyi*, Abyssinia, p. 263, *harrarensis*, Gallaland, p. 264, n. spp., JACOBSON, Annuaire Mus. St. Petersb. v.
- Carabus*: examination of numerous types, synonymy, ROESCHKE (1125); *C. cancellatus*, *emarginatus* as one species, BORN, p. 185, Verh. Ges. Wien I; *C. violaceus*; the varieties, RONCHETTI, pp. 117–120, Riv. Ital. Sci. Nat. xx; *C. italicus* var. *n. ronchettii*, BORN, p. 184, Verh. Ges. Wien I; *C. obsoletus* var. *n. csikii*, p. 231, *C. procerus* var. *n. prunieri*, p. 232, cuts, MALLÁSZ, Potfuz Termes. Kozl. xxxii; *C. auroniteus*, *granulatus*, varr., SCHULZ, p. 159, Ent. Nachr. xxvi; *C. comptus* varr., KRAATZ, pp. 381, 382, Deutsche ent. Zeitschr. 1900; *C. truncaticollis*, early stages, KINCAID, p. 368, pl. xxii, P. Washington Ac. ii.
- C. hissarianus*, Buchara, SEMENOW, p. 676, Horae Soc. ent. Ross. xxxiv; *C. (Zoocarabus) kastschenkoi*, Siberia, BRANCSIK, p. 97, pl. iv, fig. 1, Jahresh. Ver. Trenczin xxi : n. spp.
- Cardiostenus* subg. n. cf. *Trichocellus*.
- Carenidium pyripenne*, Shark's Bay, SLOANE, p. 386, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Carenium*; species grouped and discussed, pp. 363–368; characters of various species, synonymy, pp. 368–372, SLOANE, t. c.
- C. emarginatum*, p. 372, *ovale*, p. 374, *lobatum*, p. 375, *serratipes*, p. 376, *tumidipes*, p. 377, *regulare*, p. 380, Australia, SLOANE, t. c., n. spp.
- Cascelius*, a valid genus, characters, SEMENOW, p. 80, Horae Soc. ent. Ross. xxxiv.
- Casnonia carulans* (Künck.), Madagascar, ALLUAUD, p. 410, Bull. Mus. Paris 1899; *C. sexmacula*, p. 415, *tschoffeni*, *brunneomarginata*, p. 416, *cyaneolimbata*, *laevis*, p. 418, Centr. Africa, ROUSSEAU, Ann. Soc. ent. Belgique xliv : n. spp.
- Celistus* subg. n. of *Lesticus* for *L. andamanensis*, Tschitschérine, p. 186, Horae Soc. ent. Ross. xxxiv.

- Chætauchenium* subg. n. of *Platysoma*, for *P. convexipenne* Fairm. = (*Percus alienus* Reed), TSCHITSCHÉRINE, p. 461, t. c.
- Chaetobroscus* n. g. for *Broscus anomalus* Chaud., SEMENOW, p. 44, t. c.
- Clivina obliquata* Putz. = (*adelaidae* Blackb.), BLACKBURN, p. 35, Tr. R. Soc. S. Austral. xxiv.
- C. carinifrons*, Buchara, REITTER, p. 225, pl. ii, fig. 1, Wien. ent. Zeit. xix;
- C. cyrensis*, S. Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Collivis cerularius* and *Stenidea perrieri*, one species, ALLUAUD, p. 19, Bull. Soc. ent. France 1900.
- C. madagascariensis*, *suturatus*, Madagascar, ALLUAUD, p. 411, Bull. Mus. Paris 1899, n. spp.
- Colpodes placidus*, Celebes, HELLER, p. 3, pl. fig. 1, Abh. Mus. Dresden ix, No. 5, n. sp.
- Coptolabrus fruhstorferi*, Tushima, ROESCHKE, p. 162, Ent. Nachr. xxvi, n. sp.
- Craspedonotus margellanicus* Kr. referred to *Pseudobroscus*, SEMENOW, p. 45, Horæ Soc. ent. Ross. xxxiv.
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- Cyathorax peryphoides* and *cordicollis* distinctions, BLACKBURN, p. 36, Tr. R. Soc. S. Austral. xxiv.
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- Cymindis lineata* and *axillaris* distinguished, GANGLBÄUER, p. 139, BODE-MEYER (131).
- Cynthidia*, notes on, TSCHITSCHÉRINE, pp. 217, 218, Horæ Soc. ent. Ross. xxiv.
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- Drimostoma humerosum* var. n. *dilutipes*, TSCHITSCHÉRINE, p. 265, Horæ Soc. ent. Ross. xxxiv; *D. fuscipes* Br. referred to *Adrimus*, characters, TSCHITSCHÉRINE, p. 244, t. c.
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- Dromius cordicollis*, note, VORBRINGER, p. 302, Ent. Nachr. xxvi; *D. accentifer* Raffr. referred to *Metabletus*, redescribed, SAHLBERG, p. 181, Ofv. Finska Forh. xlvi; *D. opacicolor* referred to *Microdaccus*, REITTER, p. 242, Wien. ent. Zeit. xix.
- D. pilifer*, p. 12, *dendrobates*, p. 13, Algeria, BEDEL, Bull. Soc. ent. France 1900; *D. caucasicus*, W. Caucasus, SEMENOW, p. 88, Horæ Soc. ent. Ross. xxxiv; *D. australiensis*, Australia, SLOANE, p. 583, P. Linn. Soc. N. S. Wales xxiv : n. spp.
- Epactius* (*Omophron*) *grandulieri*, Madagascar, ALLUAUD, p. 409, Bull. Mus. Paris 1899, n. sp.
- Epiharpalus* subg. n. of *Harpalus*, REITTER, p. 75, Verh. Ver. Brunn xxxviii.
- Eucampognathus*, table of species, TSCHITSCHÉRINE, pp. 109–117, Horæ Soc. ent. Ross. xxxiv.
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- Holconotus madagascariensis*, Madagascar, TSCHITSCHÉRINE, p. 291, Horae Soc. ent. Ross. xxxiv, n. sp.
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- Lionychus unicolor*, Caucasus, FLEISCHER, p. 233, Wien. ent. Zeit. xix, n. sp.
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- Macrochilus nigrotibialis*, Celebes, HELLER, p. 2, Abh. Mus. Dresden ix, No. 5, n. sp.
- Marsyas bahia*, Brazil, TSCHITSCHÉRINE, p. 216, Horæ Soc. ent. Ross. xxxiv, n. sp.
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- Omophron clavareau*, Congo, ROUSSEAU, p. 412, Ann. Soc. ent. Belgique xliv, n. sp.
- Omphreoides bucculentus*, Madagascar, ALLUAUD, p. 413, Bull. Mus. Paris 1899, n. sp.
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- Percosia politissima*, Lebanon, REITTER, p. 81, Deutsche ent. Zeitschr. 1900, n. sp.
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- Plagioplatys* subg. n. of *Platysma*, p. 471, for *P. vagans* Dej., TSCHITSCHÉRINE, Horae Soc. ent. Ross. xxxiv.
- Platyderus elegans*, Tunis, BEDEL, p. 170, Bull. Soc. ent. France 1900, n. sp.
- Platysma*: subgenn. see *Antarctobium*, *Chætauchenium*, *Eutany*, *Feroniomorpha*, *Hoplauchenium*, *Meraulax*, *Metamelanius*, *Paranortes*, *Parhyppates*, *Plagioplatys*, *Ophryogaster*, *P.* subg. *Bothriopterus*, revision, TSCHITSCHÉRINE, pp. 606–613, Horae Soc. ent. Ross. xxxiv; *P.* (*Feroniomorpha*) *orbignyi* n. n. for *obtusum* Br., SEMENOW, p. 377, t. c.
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- Stomoxaetus striaticollis*, *rufipes*, *japonicus*, characters, synonymy, SEMENOW, pp. 261–264, Horae Soc. ent. Ross. xxxiv.
- Tachys*, monograph of the N. American, 45 species divided into nine groups, HAYWARD, Tr. Amer. ent. Soc. xxvi, pp. 191–238.
- T. centralis*, Transcaspian, p. 178, *humeralis*, Tunis, p. 179, SALHBERG, Ofv. Finska Forh. xlii; *T. mulwalensis*, Australia, SLOANE, p. 566, P. Linn. Soc. N. S. Wales xxiv; *T. falli*, p. 199, *liebecki*, p. 207, *frontalis*, p. 212, *bradycellinus*, p. 224, *latipennis*, p. 227, *columbianus*, p. 231, N. America, HAYWARD, Tr. Amer. ent. Soc. xxvi : n. spp.
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- T. wieneckei*, Patagonia, ROUSSEAU, p. 108, Ann. Soc. ent. Belgique xliv, n. sp.

- Trichocellus*, supplementary revision, Tschitschérine, pp. 52–58, Horæ Soc. ent. Ross. xxxiv.
- T. (Cardiostenus subg. n.) parvicollis*, Transcaspian, Tschitschérine, t. c. n. sp.
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- [Cf. BORDAS (144), GANGLBAUER (131), RÉGIMBART (1078 to 1081), REITTER (1095), SEMENOW (1196).]
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- Anagabus limbatus*, Buchara, REITTER, p. 226, pl. ii, f. 3, Wien. ent. Zeit. xix, n. sp.
- Bidessodes* n. g., p. 528, for *B. semistriatus*, p. 529, *fragilis*, p. 530, n. spp., S. America, and *Bidessus elongatus* Sharp, RÉGIMBART, Ann. Mus. Genova xl.
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- C. weyersi*, Sumatra, RÉGIMBART, p. 148, Ann. Soc. ent. Belgique xliv, n. sp.
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- Platambus esculerai*, Persia, RÉGIMBART, p. 121, Bull. Soc. ent. France 1901, n. sp.

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- Alianta bipartita*, France and Corsica, FAUVEL, p. 243, Rev. Ent. franc. xix, n. sp.
- Aloconota bodemeyeri*, Asia Minor, BERNHAUER, p. 142, BODEMEYER (131) and p. 52, Wien. ent. Zeit. xix, n. sp.
- Amblyopus* and *Myotyphlus* (= *Cryptommatus* Matth.), characters, synonymy, FAUVEL (399).
- A. brandei*, Peru, KRAATZ, p. 212, Deutsche ent. Zeitschr. 1900; *A. germaini*, Peru, p. 63, *waterhousei*, Ecuador, p. 64, FAUVEL, Rev. Ent. franc. xix : n. spp.
- Anthobium densipenne*, Erzeroum, *cribellum*, Calabria, p. 218, *albipilis*, Tyrol, p. 219, FAUVEL, t. c. n. spp.
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- A. bosnicus*, Sarajevo, BERNHAUER, p. 539, t. c. n. sp.
- Astenuus siculus*, Sicily, *walkeri*, Malta, p. 224, *notatus*, *pictipennis*, Persia, p. 225, FAUVEL, Rev. Ent. franc. xix, n. spp.
- Astibus akinini* referred to *Myrmecopora*, REITTER, p. 242, Wien. ent. Zeit. xix.
- A. meridianus*, S. Europe, FAUVEL, p. 244, Rev. Ent. franc. xix, n. sp.
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- B. cribricollis*, New Zealand, FAUVEL, p. 184, Rev. Ent. franc. xix, n. sp.
- Bledius hispidulus* = (*morio* Heer), FAUVEL, p. 161, t. c.
- B. gabonensis*, *curticornis*, p. 68, *aculeatus*, p. 69, Congo, FAUVEL, t. c.; *B. amplicollis*, New Zealand, FAUVEL, p. 185, t. c. : n. spp.
- Callicerus muensteri*, Genzano, BERNHAUER, p. 533, Verh. Ges. Wien l., n. sp.
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- Hygrogeus* n. g. for *Geodromicus* subg. *Hygrogeus* Roy, GANGLBAUER, Käf. Mitteleur. ii, p. 710. [REY's subgen. was not indexed in Zool. Rec. 1880, this name is therefore new.]
- Hygrogeus penicillatus*, Buchara, REITTER, p. 49, Deutsche ent. Zeitschr. 1900, n. sp.
- Hygropora densa*, France, FAUVEL, p. 251, Rev. Ent. franc. xix, n. sp.
- Hypocyptus claviger*, Tuscany, FAUVEL, p. 235, t. c. n. sp.
- Indoscutalinus* subg. n. cf. *Xantholinus*.
- Lathrobium doderoi*, note on, FAUVEL, p. 282, Bull. Soc. ent. France 1900. *L. (Glyptomerus) doderoi*, Genoa, ABEILLE, p. 204, t. c.; *L. sahlbergi*, Turkestan, FAUVEL, p. 227, Rev. Ent. franc. xix : n. spp.
- Leptacinus linearis* a valid species, characters, GERHARDT, pp. 72-74, Deutsche ent. Zeitschr. 1900 and p. 10, Zeitschr. Ent. Breslau xxv.
- Leptoglenus* subg. n. cf. *Leptolinus*.
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- Leptotyphlus perpusillus*, Genoa, GESTRO, p. 573, Ann. Mus. Genova xl, n. sp.
- Leptum*; monograph of palearctic, BERNHAUER, Verh. Ges. Wien 1, pp. 399-432; *L. koronensis* and *abdominalis*, distinguished, BERNHAUER, p. 42, t. c.
- L. (Sipalia) heliasi*, Digne, PEYERIMHOFF, p. 8, Bull. Soc. ent. France 1900; *L. major*, p. 416, *doderoi*, p. 418, Italy, *abeillei*, Spain, p. 423, BERNHAUER, Verh. Ges. Wien 1; *L. tirolensis*, Austria, p. 43, *tenerima*, Reynosa, p. 44, *merkli*, Turkey, p. 45, BERNHAUER, t. c. : n. spp.
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- Micropeplus devillei*, Corsica, GANGLBAUER, p. 203, Verh. Ges. Wien 1, n. sp.
- Mimocete* and *Dorylozenus*, distinctions queried, WASMANN, pp. 263-266, Zool. Jahrb. Syst. xiv.
- Mycetoporus oreophilus*, Siebenbürgen, BERNHAUER, p. 45, Verh. Ges. Wien 1, n. sp.
- Myllaena tenuicornis*, S. France, FAUVEL, p. 236, Rev. Ent. franc. xix, n. sp.
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- Myrmobiotia* distinguished from *Homoeusa*, CASEY, p. 54, J. N. York Ent. Soc. viii.
- Niphetodes spaethi*, E. Europe, GANGLBAUER, p. 259, Verh. Ges. Wien 1, n. sp.
- Ocalea reitteri*, Caucasus, BERNHAUER, p. 46, Wien. ent. Zeit. xix, n. sp.
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- O. integer*, Smyrna, ABEILLE, p. 203, Bull. Soc. ent. France 1900; note on *O. integer*, FAUVEL, p. 282, t. c.; *O. ottomanus*, Constantinople, FAUVEL, p. 230, Rev. Ent. franc. xix : n. spp.
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- Oreusa* subg. n. of *Leptusa* for *L. tirolensis* Bernh., etc., BERNHAUER, pp. 403 & 413, t. c.
- Orochares angustata*, habits, KRAUSS, p. 239, Wien. ent. Zeit. xix.
- Othisus punctulatus* Goeze=(*fulvipennis* Fab.), FAUVEL, p. 228, Rev. Ent. franc. xix.
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- Paeurus listeri*, Christmas Is., GAHAN, p. 89, Monogr. Christmas Island, n. sp.
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- Philonthus juvenilis* Pehr.=*(ganglbaueri* Bernh.), BERNHAUER, p. 46, Verh. Ges. Wien 1; *P. cruentatus* var. n. *extinctus*, BERNHAUER, p. 145, BODEMEYER (131).
- P. armeniacus*, Caucasus, BERNHAUER, p. 538, t. c.; *P. limbatus*, p. 230, Baikal, *alaiensis*, Turkestan, p. 231, *turcmenus*, Buchara, p. 232, FAUVEL, Rev. Ent. franc. xix : n. spp.
- Phleocharis* (*Scotodytes*) *ichnusæ*, Sardinia, DODERO, p. 404, Ann. Mus. Genova xl, n. sp.
- Phleopora nitidiventris* (= *reptans* Rey), Algeria, FAUVEL, p. 61, Rev. Ent. franc. xix, n. sp.
- Placusa depressa*, *complanata*, characters, synonymy, FAUVEL, p. 237, t. c.
- P. nitida*, Corsica, FAUVEL, p. 238, t. c. n. sp.
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- Platysthetus rugifrons*, Asia Minor, BERNHAUER, p. 145, BODEMEYER (131) and p. 55, Wien. ent. Zeit. xix, n. sp.
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- Sipalia turcica*, Belgrade, BERNHAUER, p. 535, Verh. Ges. Wien 1; *S. anatolica*, Broussa, FAUVEL, p. 245, Rev. Ent. franc. xix : n. spp.
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- Sunius ampliventris*, Buchara, REITTER, p. 228, pl. ii, fig. 4, Wien. ent. Zeit. xix, n. sp.

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- Tachinus*; revision of European and Siberian, with tables of species, synonymy, and characters of sexes, LUZE, Verh. Ges. Wien 1, pp. 475–508.
- Tachinus abeconditus*, Mongolia, p. 475, *schneideri*, Caucasus, *furcatus*, Mongolia, p. 476, *gracilicornis*, Caucasus, p. 477, LUZE, t. c.; *T. salbergi*, Turkestan, FAUVEL, p. 234, Rev. Ent. franc. xix : n. spp.
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- Teropalpus* Sol. (s. g. of *Trogophleus*) = (*Trogolinus* Sharp), FAUVEL, p. 182, t. c.
- Tetradonia goeldii*, Brazil, with *Ecton quadriglume*, WASMANN, p. 237, pl. xiii, fig. 5, Zool. Jahrb. Syst. xiv, n. sp.
- Thiasophila nitescens*, France, FAUVEL, p. 250, Rev. Ent. franc. xix, n. sp.
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- Trogolinus* subg. n., cf. *Trogophleus* and *Trogophlaeus*
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- Typhlocyptus pandellei*, description and figure, FAUVEL, pp. 190–192, Rev. Ent. franc. xix.
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- Bythinus dalmatinus* and *melinenensis*, distinguished, Reitt., KRAUSS, p. 292, Verh. Ges. Wien 1; *B. erichsoni*, variation, KRAUSS, p. 240, Wien.

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- Eupinopsis punctata*, Australia, RAFFRAY, p. 192, t. c. n. sp.
- Gerallus* Sharp = (*Zosimus* Schauf.), RAFFRAY, p. 234, t. c.
- G. dimidiatus*, Swan River, id., p. 236, t. c. n. sp.
- Gnesion* n. g. *Bythinini*, p. 192, for *G. rufulum*, n. sp., Australia, p. 193, RAFFRAY, t. c.
- Hamotopsis* n. g. near *Hamotus*, for *H. australasiae*, n. sp., N. S. Wales, RAFFRAY, p. 217, t. c.
- Hamotulus* *dispar*, N. S. Wales, RAFFRAY, p. 218, t. c. n. sp.
- Leanymus* n. g. near *Didimopatra*, p. 219, for *L. palpalis*, n. sp., Australia, p. 220, pl. x, figg. 5, 6, RAFFRAY, t. c.
- Mesoplatus* *tuberculatus*, pl. x, fig. 32, *longicollis*, p. 134, *mastersi*, p. 135, *nitidus*, p. 136, Australia, RAFFRAY, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Paraplectus biplagiatus*, p. 132, pl. x, fig. 33, *infuscatus*, p. 133, Australia, RAFFRAY, t. c. n. spp.
- Pselaphophus* *unicolor*, N. S. Wales, RAFFRAY, p. 203, t. c. n. sp.
- Pselaphus* *teanus*, p. 198, *tuberculifrons*, p. 199, *elongatus*, *crassus*, p. 200, *pilosus*, p. 201, Australia, RAFFRAY, t. c. n. spp.
- Pselaptus* (by error as *Pselaphus*) *formicarius*, Colombia, RAFFRAY, pp. 305 & 460, Bull. Soc. ent. France 1900, n. sp.
- Reichenbachia* (*Brachygluta*) *hummleri*, Italy, p. 290, *fuchsii*, Dalmatia, p. 291, KRAUSS, Verh. Ges. Wien 1; *R. surinacauda*, Asia Minor, GANGLBauer, p. 146, BODEMEYER (131) : n. spp.
- Rybaris* *isidorei* = (*harti* Black.), p. 151, *recta* ♂, p. 154, pl. x, fig. 42, p. 154, RAFFRAY, P. Linn. Soc. N. S. Wales xxv.
- R. marquardti*, Buchara, REITTER, p. 50, Deutsche ent. Zeitschr. 1900; *R. antilope*, p. 155, pl. x, fig. 43, *grandis*, p. 156, *adumbrata*, p. 158, *quinquefoveolata*, p. 159, RAFFRAY, t. c. : n. spp.

Spilorhombus n. g. near *Didimopora*, p. 225, for *S. hirtus*, n. sp., Swan River, p. 226, RAFFRAY, P. Linn. Soc. N. S. Wales xxv.

Tmesiphorus termiophilus, Swan River, RAFFRAY, p. 215, t. c. n. sp.

Trichobythus subg. n. cf. *Bythinus*.

Trimium zonifali, Ancona, KRAUSS, p. 289, Verh. Ges. Wien l; *T. minimum*, Piedmont, DODERO, p. 405, Ann. Mus. Genova xl : n. spp.

Tyraphus rugicollis, Australia, RAFFRAY, p. 207, P. Linn. Soc. N. S. Wales xxv, n. sp.

Tyromorphus nigricornis, p. 228, *cribratus*, p. 229, *dispar*, p. 231, *lavis*, p. 232, Australia, RAFFRAY, t. c. n. spp.

PAUSSIDÆ.

[Cf. BEDEL (87), GESTRO (499).]

Catalogue of *Paussidae*; 270 species, GESTRO, pp. 811–850, Ann. Mus. Genova xl.

Arthropterus senegalensis, Africa, GESTRO, p. 820, t. c. n. sp.

Ceratoderus oberthuri, Bombay, GESTRO, p. 823, t. c. n. sp.

Pausus cornutus and allies, synonymy, BEDEL, p. 279, Bull. Soc. ent. France 1900.

P. aldrovandii, Cape of Good Hope, *spinolæ*, p. 824, *tigrinus*, p. 825, Abyssinia, GESTRO, Ann. Mus. Genova xl; *P. sahara* (= *cornutus* Fairm. nec Chevr.), BEDEL, p. 278, Bull. Soc. ent. France 1900 : n. spp.

Pleuropterus taprobanensis, Ceylon, p. 821, *cardoni*, Bengal, p. 822, GESTRO, Ann. Mus. Genova xl, n. spp.

SCYDMAENIDÆ.

[Cf. CROISSANDEAU (296), FLEISCHER (424), GANGLBAUER (487), REITTER (1099, 1101).]

Completion of CROISSANDEAU's (296) monograph of European *Scydmanidae*. *Diarthroconnus* subg. n. cf. *Euconnus*.

Euconnus (*Tetramelus*) *scipio*, Broussa, REITTER, p. 81, Deutsche ent. Zeitschr. 1900; *E.* (*Diarthroconnus* subg. n.) for *E. birnbacheri*, Austria, GANGLBAUER, p. 261, Verh. Ges. Wien l : n. spp.

Neuraphes (*Pararaphes*) *puncticeps*, Vallombrosa, FLEISCHER, p. 232, Wien. ent. Zeit. xix; *N.* (*Pararaphes*) *deubeli*, Austria, GANGLBAUER, p. 260, Verh. Ges. Wien l : n. spp.

Scydmaenus (*Eumicrus*) *longipilis*, Buchara, REITTER, p. 50, Deutsche ent. Zeitschr. 1900, n. sp.

SILPHIDÆ.

[Cf. DODERO (335), ESCALERA (380), FAIRMAIRE (389), GANGLBAUER (131), KRAUSS (780), REITTER (1094, 1095), XAMBEU (1420).]

Agathidium sahlbergi, Palestine, REITTER, p. 218, Wien. ent. Zeit. xix, n. sp.

Anemadus *cibratostriatus*, Asia Minor, GANGLBAUER, p. 147, BODEMEYER (131), n. sp.

Attumbra judæa, Bethlehem, REITTER, p. 217, t. c. n. sp.

Bathyecia: habits; revision of Spanish, ESCALERA, An. Soc. Espan. xxviii, pp. 363–412; *B. sarteanensis* = (*dolivata* Reitt.), *B. spagnoli* var. n. *brevipilis*, DODERO, p. 417, Ann. Mus. Genova xl.

B. subterranea, Ancona, KRAUSS, p. 292, Verh. Ges. Wien le R - p. 382, *autumnalis*, p. 388, *boliviari*, p. 398, Spain..]

- Espan.* xxxviii; *B. antrorum* with var. *brachycera*, p. 415, *solarii* p. 416, Italy, DODERO, Ann. Mus. Genova xl : n. spp.
Catops cholevooides, p. 217, *sahlbergi*, p. 218, Transcaspian, REITTER, Wien. ent. Zeit. xix, n. spp.
Chobautiella n. g. *Anisotomides*, p. 229, for *C. anisotomoides* Fairm., pl. ii, fig. 9, REITTER, t. c.
Liodes anisotomoides, see *Trachyscelis anisotomoides*, *Tenebrionidae*.
Necrophorus corsicus var. n. *vodozi*, *laportei*, MEIER, p. 218, Ent. Nachr. xxvi; *N. vestigator* var. n. *rauterbergi*, REITTER, p. 82, Deutsche ent. Zeitschr. 1900.
Silpha bicolor, China, FAIRMAIRE, p. 616, Ann. Soc. ent. France lxviii, n. sp.

TRICHOPTERYGIDÆ.

P. B. MASON (870) has published a supplement by the late A. MATTHEWS to his monograph of Trichopterygidae, including *Hydroscaphidae*.
Ptinella fauvetii, New Zealand, MATTHEWS, p. 19, Trichopt. Suppl. n. sp.
Trichopteryx; table of the species, MATTHEWS, t. c. pp. 38–46.
T. fuliginosa, Mexico, MATTHEWS, p. 68, t. c. n. sp.

SCAPHIDIIDÆ.

- Baeocera pallida*, *abdominalis*, *discolor*, *ruberiventris*, N. America, CASEY, p. 58, J. N. York Ent. Soc. viii, n. spp.
Cyprarium ater, Texas, CASEY, p. 56, t. c. n. sp.
Scaphidium ornatum, *amplum*, N. America, CASEY, p. 56, t. c. n. spp.
Scaphiomicrus n. g., p. 58, for *Scaphisoma pusilla* Lec., and *S. dimidiatus*, *flavescens*, *lacustris*, *nugator*, p. 59, *exiguus*, p. 60, n. spp., N. America, CASEY, t. c.

HISTERIDÆ.

- [Cf. BLACKBURN (125), FUENTE (475), LEWIS (29, 820, 821), MÜLLER (929), PEYERIMHOFF (996), REITTER (1101), THÉRY (1318), WASMANN (1377).]
Acritus nigricornis and *seminulum* are sexes of *A. nigricornis*, MÜLLER, p. 301, Verh. Ges. Wien I.
Apobletes parallelus, Sumatra, p. 268, *canifrons*, Assam, *macilentus*, Sumatra, p. 269, *platessæ*, Usambara, p. 270, LEWIS, Ann. Nat. Hist. vi, n. spp.
Chlamydopsis pygidialis, Victoria, BLACKBURN, p. 206, P. Soc. Victoria xii, n. sp.
Epiechonus marsculi = (*hispidus* Mars, nec Payk.), LEWIS, p. 290, Ann. Nat. Hist. vi, n. sp.
Epierus festivus referred to *Phelister*, LEWIS, p. 227, Ann. Nat. Hist. v.
E. foederatus, Australia, LEWIS, p. 251, t. c. n. sp.
Epitoxus n. g. near *Phelister*, for *E. corycaeus*, n. sp., Congo, LEWIS, op. cit. vi, p. 278.
Hister holubi, p. 231, *sessilis*, p. 249, characters, LEWIS, op. cit. v; *H. sepulchralis* var. n. *impunctatus*, p. 138, characters of allies, p. 139, MÜLLER, Wien. ent. Zeit. xix.
H. montenegrinus, Sarajevo, MÜLLER, p. 137, t. c.; *H. congoensis*, Africa, p. 230, *sinuosus*, Texas, p. 231, *gibberosus*, Mexico, p. 232, *meridanus*, Yucatan, p. 233, *lavimargo*, p. 246, *planimargo*, Costa Rica, *cinctipygus*, Siam, p. 247, *terræmotus*, Java, p. 248, *pinnulae*, Borneo,

- vacillans*, Tenasserim, p. 250, LEWIS, Ann. Nat. Hist. v; *H. mombanus*, p. 279, *zamberius*, *angoniensis*, p. 280, Africa, *brahminius*, Ceylon, p. 281, *frontalis*, Assam, p. 282, LEWIS, op. cit. vi : n. spp.
Hololepta dyak, Borneo, p. 266, *syntaxia*, W. Africa, p. 267, LEWIS, t. c.;
H. malleata, Christmas Is., LEWIS, p. 90, Mon. Christmas Island : n. spp.
Homalopygus remex, Paraguay, LEWIS, p. 285, pl. x, fig. 10, Ann. Nat. Hist. vi, n. sp.
Liopygus chalcis, Perak etc., LEWIS, p. 270, t. c. n. sp.
Notoccelis n. g. p. 283, near *Discoceelis*, for *N. satur*, n. sp., Paraguay, p. 284, pl. x, fig. 9, LEWIS, Ann. Nat. Hist. vi.
Omalodes sinuaticollis, characters, LEWIS, p. 230, op. cit. v.
O. felix, p. 228, *striatipectus*, p. 229, S. America, LEWIS, t. c. n. spp.
Pachycraerus chlorites, W. Africa, LEWIS, p. 274, op. cit. vi, n. sp.
Phelister illustris, p. 226, *chapade*, p. 227, Brazil, LEWIS, op. cit. v, n. spp.
Placodes opacus, Congo, LEWIS, p. 224, t. c. n. sp.
Platylistes mirabilis, Khasia hills, LEWIS, p. 225, t. c.; *P. cashayi*, China, p. 271, *enodis*, New Guinea, p. 272, LEWIS, op. cit. vi : n. spp.
Platysoma assamense, Khasia hills, *disparile*, Lombok, LEWIS, p. 273, t. c.; *P. lignarium*, Christmas Is., LEWIS, p. 91, Mon. Christmas Island; *P. sulcisternum*, Australia, LEWIS, p. 226, Ann. Nat. Hist. v : n. spp.
Probolosternus n. g. near *Pachycraerus*, for *P. africanus*, p. 275, *permundus*, p. 276, pl. x, fig. 4, *minor*, p. 277, n. spp., W. Africa, LEWIS, op. cit. vi.
Saprinus immundus is a var. of *S. aeneus*, *S. pulcherrimus*, var. n. *similis*, MÜLLER, p. 141, Wien. ent. Zeit. xix; *S. castanipes* Curt. = (*fulvopterus* Mars., *bisignatus* Er. = (*matthewsi* Curt.), *connectens* Payk. = *furcatus* Curt.), LEWIS, p. 288, Ann. Nat. Hist. vi.
S. navasi, Spain, FUENTE, p. 188, Act. Soc. Espan. 1900; *S. punctisternus*, China, p. 287, *lesuei*, Ecuador, p. 288, LEWIS, Ann. Nat. Hist. vi; *S. amethystinus*, Queensland, LEWIS, p. 253, op. cit. v : n. spp.
Sitalia n. g. for *Paratropus severini* Lew., figured, p. 285, LEWIS, op. cit. vi.
Spathocerus coyei, myrmecophilous habits, PIC, p. 171, Bull. Soc. ent. France 1900.
Sternocelis ovalis, Algeria, LEWIS, p. 252, Ann. Nat. Hist. v, n. sp.
Stictostix parra, figure, LEWIS, p. 283, op. cit. vi.
Terapus muricatus, Paraguay, LEWIS, p. 286, pl. x, fig. 12, t. c. n. sp.
Teratosoma longipes, habits and characters, WASMANN, pp. 250–254, pl. xiv, fig. 17, Zool. Jahrb. Syst. xiv.
Terestrius acaciae, Tunisia, REITTER, p. 83, Deutsche ent. Zeitschr. 1900;
T. braganzae, W. Africa, LEWIS, p. 289, Ann. Nat. Hist. vi : n. spp.
Tribulus amnicola, Mashonaland, LEWIS, p. 252, op. cit. v, n. sp.
Xenonychus bidens, Biskra, PEYERIMHOFF, p. 202, Bull. Soc. ent. France 1900; *X. chobauti*, Algeria, THÉRY, p. 32, t. c. : n. spp.

NITIDULIDÆ and MONOTOMIDÆ.

[Cf. ARROW (36), GROUVELLE (540), REITTER (1086, 1089), SHARP (511).]

- Amartus appli*, Beirut, GANGLBAUER, p. 147, BODEMEYER (131), n. sp.
Aneurope n. g. for *A. championi*, n. sp., Guatemala, SHARP, p. 573, pl. xviii, fig. 4, Biol. Centr. Amer. Col. ii, pt. i.
Bactridium dirisum, p. 574, *brevicornae*, *crassum*, p. 575, *angustum*, *stahli*, *rude*, pl. xviii, fig. 5, p. 576, *eumorphum*, fig. 6, *germanum*, p. 577, Centr. America, SHARP, t. c., n. spp.
Carpophilus (Nitops) weyseri, Sumatra, GROUVELLE. —
Belgique xliv, n. sp.

- Cybocephalus aurocupreus*, Transcaspian, REITTER, p. 219, Wien. ent. Zeit. xix, n. sp.
- Europs diffusus*, p. 567, *bilineatus*, *cognatus*, *illæsus*, p. 568, *obtusus*, *oxytelus*, pl. xviii, fig. 2, p. 569, *simplex*, *euplectoides*, *pumilio*, p. 570, *nanus*, *longulus*, fig. 3, p. 571, *convergens*, *luridipennis*, *discedens*, p. 572, Centr. America, SHARP, Biol. Centr. Amer. Col. ii, pt. i, n. spp.
- Hesperobanus stipes*, Guatemala, SHARP, p. 566, pl. xviii, fig. 1, t. c. n. sp.
- Heterhelus corpulentus*, Irkutsk, REITTER, p. 231, pl. ii, fig. 7, Wien. ent. Zeit. xix, n. sp.
- Meligethes explanatus*, Buchara, REITTER, p. 52, Deutsche ent. Zeitschr. 1900, n. sp.
- Monotoma centralis*, *munda*, p. 564, *pusilla*, p. 565, Centr. America, SHARP, Biol. Centr. Amer. Col. ii, pt. i, n. spp.
- Narcisa decidua* var. n. *nigricornis*, HELLER, p. 7, Abh. Mus. Dresden ix, No. 5.
- Phycomomus subtestaceus* Reitt. referred to *Hesperobanus*, SHARP, p. 565, Biol. Centr. Amer. Col. ii, pt. i.
- Stelidotata orientalis*, Christmas Is., ARROW, p. 92, Mon. Christmas Island, n. sp.
- Tisiphone chontalensis*, pl. xviii, fig. 7, p. 578, *mexicanus*, *distans*, p. 579, Centr. America, SHARP, Biol. Centr. Amer. Col. ii, pt. i, n. spp.

TROGOSITIDÆ OR TEMNOCHILIDÆ.

[Cf. ARROW (36), BEDEL (89), FAIRMAIRE (389, 395), LÉVEILLÉ (540, 818, 819).]

- Catalogue of the *Trogositidae* of the world, 476 species, LÉVEILLÉ, pp. 1–26, Ann. Soc. ent. France lxix.
- LÉVEILLÉ gives longer descriptions of the species diagnosed by him last year, op. cit. lxviii, pp. 646–653.
- Acropo weyersi*, Sumatra, LÉVEILLÉ, p. 263, Ann. Soc. ent. Belgique xliv, n. sp.
- Airora decipiens*, Mexico, LÉVEILLÉ, p. 644, Ann. Soc. ent. France lxviii, n. sp.
- Alindria grandis* Serv. and *Trogosita cylindrica* Ol., note on, LÉVEILLÉ, p. 657, t. c.
- Gaurambe minor*, Madagascar, FAIRMAIRE, p. 135, Bull. Soc. ent. France 1900, n. sp.
- Leperina turbata* Pasc. = (*fasciculata* Reitt.), *L. lacera* Pasc. = (*signoreti* Reitt. nec Montr.), LÉVEILLÉ, p. 657, t. c.
- Marnia grouvellei*, Brazil, LÉVEILLÉ, p. 644, t. c. n. sp.
- Nemosoma elongatum* var. *tuniseum*, PIC, p. 61, Echange xvi.
- N. brasiliense*, Jatahy, LÉVEILLÉ, p. 644, Ann. Soc. ent. France lxviii, n. sp.
- Nemozomia picta* var. n. *bipunctata*, LÉVEILLÉ, p. 653, t. c.
- Oniscomorpha* n. g. near *Narcisa*, p. 93, for *O. marmorata*, n. sp., Christmas Is., p. 94, pl. x, fig. 2, ARROW, Mon. Christmas Island.
- Shoguna polita*, p. 92, *striata*, p. 93, Christmas Is., ARROW, t. c. n. spp.
- Tennochila gemella*, Algeria, BEDEL, p. 335, Bull. Soc. ent. France 1900; *T. polygonalis*, Brazil, LÉVEILLÉ, p. 654, Ann. Soc. ent. France lxviii : n. spp.
- Tenebroides fossulatus*, Bolivia, *breevis*, Brazil, LÉVEILLÉ, p. 645, t. c.; *T. delicatus*, p. 655, *subruber*, p. 656, Brazil, LÉVEILLÉ, t. c. : n. spp.
- Thymalus chinensis*, China, FAIRMAIRE, p. 616, t. c. n. sp.

COLYDIIDÆ (incl. DISCOLOMIDÆ).

[Cf. ARROW (36), GROUVELLE (539, 540), SHARP (1212).]

Discolomidae; this so-called family not valid, SHARP, p. 193, Rev. Ent. franc. xix.*Bothrideres strigatus*, Christmas Is., ARROW, p. 94, pl. x, fig. 3, Mon. Christmas Island, n. sp.*Hyberis simplex*, Sumatra, GROUVELLE, p. 265, Ann. Soc. ent. Belgique xliv, n. sp.*Lascotonus frater*, Sumatra, GROUVELLE, p. 265, t. c. n. sp.*Pseudososyphus* n. g. between *Colydiini* and *Deretaphrini*, for *P. colydoides* n. sp. Congo, GROUVELLE, p. 424, t. c.

CUCUJIDÆ.

Silvanus cossorus, pl. xvii, fig. 26, p. 561, *perforatus*, fig. 27, p. 562, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i, n. spp.*Tristaria africana*, Congo, GROUVELLE, p. 424, Ann. Soc. ent. Belgique xliv, n. sp.

CRYPTOPHAGIDÆ.

[Cf. CASEY (229), GROUVELLE (540), SHARP (511).]

Agathengis subnitens, p. 109, *carinula*, *pumilio*, *patens*, *crassula*, p. 110, *capitata*, *quadricollis*, *constricta*, *tenebrosa*, p. 111, *coloradensis*, *stricticollis*, *lucida*, *luculentia*, p. 112, *forticornis*, *macer*, *ochronitens*, *undulata*, p. 113, *melas*, *soror*, *cribripennis*, p. 114, *dispersa*, *puella*, *castanea*, p. 115, *parvicolpis*, *subrecta*, p. 116, *nigricollis*, *longipennis*, *subdentata*, p. 117, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.*Anchorius* n. g. *Biphyllini*, p. 79, for *A. lineatus*, n. sp., Arizona, p. 80, CASEY, t. c.*Anepicus* n. g. for *A. brunneus* n. sp., Mexico, pl. xviii, fig. 19, SHARP, p. 600, Biol. Centr.-Amer. Col. ii, pt. i.*Anthophagus pallidivestis*, Utah, CASEY, p. 89, J. N. York Ent. Soc. viii, n. sp.*Atomaria nubipennis*, *postpallens*, p. 119, *distincta*, *divisa*, *gilvipennis*, p. 120, *saginata*, p. 121, *curtula*, *gonodera*, *riparia*, *subalutacea*, p. 122, *incerta*, *brevicollis*, *aleutica*, p. 123, *oblongula*, *crypta*, *fallax*, p. 124, *ovalis*, *inepta*, *nanula*, p. 125, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.*Canoscelis optata*, Guatemala, SHARP, p. 603, Biol. Centr.-Amer. Col. ii, pt. i; *C. ochreosa*, *parallela*, *angusticollis*, p. 105, *shastanica*, *macilenta*, *basalis*, p. 106, *ovipennis*, *macra*, *elongata*, *obscura*, *subfuscata*, p. 107, N. America, CASEY, J. N. York Ent. Soc. vi : n. spp.*Cissocryptus* n. g. for *C. insolitus* n. sp., Mexico, pl. xviii, fig. 20, SHARP, p. 601, Biol. Centr.-Amer. Col. ii, pt. i.*Caecocryptus* n. g. p. 593, for *C. mexicanus*, *cognatus*, *pallens*, p. 594, *descendens*, pl. xviii, fig. 14, p. 595, n. spp., Centr. America, SHARP, t. c.*Crosimus* n. g. near *Cryptophagus*, p. 89, for *C. obsoletus*, *hirtus*, n. spp., N. America, p. 90, CASEY, J. N. York Ent. Soc. viii.*Cryptophagus confortus*, *nodifer*, *parvinoda*, p. 94, *infuscatus*, *plectrum*, *cicatricosus*, *politus*, *difcillis*, p. 95, *plenus*, *amputatus*, *lasicollus*, p. 96, *inscitus*, *cribricollis*, *brevipilis*, *lepidus*, p. 97, *decrepitalis*, *rectus*, *antennatus*, *valens*, p. 98, *histrio*, *discrepans*, *hebes*, *lyraticollis*, *otioeus*, p. 100, N. Am.

- Curelius* n. g. for *Ephistemus dilutus* Reitt., *exiguus* Er., CASEY, p. 127, t. c.
- Diphyllus micros*, Sumatra, GROUVELLE, p. 266, Ann. Soc. ent. Belgique xliv, n. sp.
- Diplocelus bicolor*, p. 621, *parvus*, pl. xviii, fig. 24, p. 622, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i, n. spp.
- Empoocryptus* n. g. for *E. ovalis*, pl. xviii, fig. 13, n. sp., Guatemala, SHARP, t. c.
- Ephistemus reitteri*, Caucasus, CASEY, p. 128, J. N. York Ent. Soc. viii; *E. distans*, Guatemala, SHARP, p. 603, Biol. Centr.-Amer. Col. ii, pt. i : n. spp.
- Euderopus* n. g. *Biphyllina*, for *E. brevipes*, p. 622, *perbreris*, *microps*, *unicolor*, p. 623, *iteratus*, *regularis*, *setosus*, p. 624, n. spp., Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i.
- Gonicoelus* n. g. *Biphyllina*, p. 604, for *G. unicornis*, pl. xviii, fig. 22, *tricornis*, p. 605, *relictus*, *rudis*, *germanus*, p. 606, *brevicollis*, *mexicanus*, p. 607, *celatus*, *hirtus*, p. 608, *culturatus*, *longicornis*, p. 609, *mediocrius*, *parnoides*, pl. xviii, fig. 23, p. 610, *latus*, *guatemalensis*, *vestitus*, p. 611, *securiger*, *hystrix*, p. 612, *championi*, *throscoides*, *subtilis*, p. 613, *choutalenus*, *planus*, p. 614, *crispatus*, *angustus*, p. 615, *bimargo*, *spheniscus*, *humilis*, p. 616, *laticollis*, *arduus*, p. 617, *muticus*, *concolor*, *segnis*, p. 618, *monticola*, *oopsis*, p. 619, *sellatus*, *deplanatus*, p. 620, *mollis*, p. 621, Centr. America, n. spp., SHARP, t. c.
- Henoticus monticola*, *compactus*, p. 597, *loberinus*, pl. xviii, fig. 16, p. 598, Centr. America, SHARP, t. c. n. spp.
- Holosternus* n. g., p. 599, for *H. distans* n. sp., Guatemala, pl. xviii, fig. 18, p. 600, SHARP, t. c.
- Loberus chiriquensis*, *guatemalensis*, *sellatus*, p. 582, *cryptophagus*, *pallidus*, *suratalis*, p. 583, *brevicollis*, pl. xviii, fig. 9, *longulus*, *lateralis*, p. 584, *marginalis*, p. 585, Centr. America, SHARP, t. c.; *L. subglaber*, New Jersey, *imbellis*, Florida, *insularis*, Cuba, Bahamas, *puberulus*, Mexico, CASEY, p. 83, J. N. York Ent. Soc. viii : n. spp.
- Othniocryptus* n. g., p. 598, for *O. variegatus* n. sp., Panama, pl. xviii, fig. 17, p. 599, SHARP, Biol. Centr.-Amer. Col. ii, pt. i.
- Platoberus* n. g. for *P. latus*, pl. xviii, fig. 10, *rotundus*, p. 586, *robustus*, *divisus*, p. 587, n. spp., Central America, SHARP, t. c.
- Pseudohenoticus* n. g. for *P. parallelus* n. sp. pl. xviii, fig. 15, Guatemala, SHARP, p. 596, t. c.
- Pteryngium malacum*, N. America, CASEY, p. 102, J. N. York Ent. Soc. viii, n. sp.
- Salebius* n. g. near *Cryptophagus*, for *S. 6-dentatus*, p. 90, *minax*, *lictor*, *montanus*, *tarsalis*, p. 91, n. spp., N. America, CASEY, t. c.
- Telmatoscius* n. g. near *Loberus*, for *T. claviger* n. sp., Mexico, pl. xviii, fig. 8, p. 581, SHARP, Biol. Centr.-Amer. Col. ii, pt. i.
- Tisactia* n. g. near *Atomaria*, for *T. subglabra*, n. sp., Indiana, CASEY, p. 126, J. N. York Ent. Soc. viii.
- Tomarus obsoletus*, Arizona, CASEY, p. 85, t. c.; *T. niger*, p. 587, *debilis*, pl. xviii, fig. 11, *pubescens*, *lateralis*, p. 588, *pictipennis*, *atomarius*, p. 589, *picticornis*, *discoidens*, *confertus*, p. 590, *latipennis*, *abjectus*, p. 591, *heterocerus*, fig. 12, *lentus*, p. 592, Centr. America, SHARP, Biol. Centr.-Amer. Col. ii, pt. i : n. spp.
- Trogocryptus* n. g. for *T. nigripectus* n. sp., Guatemala, pl. xviii, fig. 21, SHARP, p. 602, t. c.

LATHRIDIIDÆ.

Recent classifications discussed and compared, the genera annotated, the supplementary species catalogued with synonymy, BELON (92A).

Descriptions of S. African *Lathridiidæ*, BELON (93).

Anommatus; characters of species, REITTER, p. 12, Wien. ent. Zeit. xix;

A. distinctus Dod. (below) referred to *Abromus*, REITTER, p. 242, t. c.

A. plicatus var. n. *dictyoderus*, DODERO, p. 419, Ann. Mus. Genova xi.

A. distinctus, San Remo, with var. *devillei*, Alpes maritimes, DODERO, p. 418, t. c. n. sp.

MYCETOPHAGIDÆ.

[Cf. CASEY (229), GROUVELLE (540), XAMBEU (1420).]

Alitargus subg. n. See *Litargus*.

Berginus: not *Mycetophagid*, to be placed near *Lyctus*, CASEY, p. 129, J. N. York Ent. Soc. viii.

B. bahamicus, Eleuthera, id. l. c. n. sp.

Gratusus subg. n., cf. *Tritoma*.

Illeodus subg. n., cf. *Tritoma*.

Litargellus subg. n., see *Litargus*.

Litargus; N. American tabulated with *Tilargus* subg. n. for *L. 4-spilotus*.

Paralitargus subg. n. for *L. didesmus*, *Alitargus* subg. n. for *L. balteatus* Lec., *Litargellus* subg. n. for *L. nebulosus* Lec., CASEY, pp. 135, 136, J. N. York Ent. Soc. viii.

L. weyersi, *latus*, Sumatra, GROUVELLE, p. 267, Ann. Soc. ent. Belgique xlii; *L. (Paralitargus) asperulus*, Dakota, CASEY, p. 136, J. N. York Ent. Soc. viii : n. spp.

Paralitargus subg. n., see *Litargus*.

Parilendus subg. n., cf. *Tritoma*.

Thrimodus n. g. ?near *Typhaea*, for *T. minutus* n. sp., Texas, CASEY, p. 137, J. N. York Ent. Soc. viii.

Tilargus subg. n., see *Litargus*.

Tritoma; N. American species tabulated, with following new subgenera, *Illeodus* for *T. melsheimeri* and allies, *Parilendus* for *T. bipustulata* etc., *Gratusus* for *T. pluriguttatus* etc., CASEY, pp. 131-134, J. N. York Ent. Soc. viii.

Tritoma serrulata, *picta*, *subdepressa*, p. 132, *T. (Gratusus) notatula*, p. 134, N. America, CASEY, l. c. n. spp.

DERMESTIDÆ.

[Cf. CASEY (229), GANGLBAUER (131), PIC (1024), REITTER (1094).]

Study of N. American *Dermestidae*, CASEY, J. N. York Ent. Soc. viii.

Anthrenus; larval habits, POUJADE, p. 169, Bull. Soc. ent. France 1900;

Anthrenus; see also *Nathrenus*.

A. occidens, p. 160, *parvus*, p. 161, *rotundulus*, p. 162, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.

Attagenus extricatus, *deficiens*, p. 146, *elongatus*, p. 147, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.

Cryptorhopalum filitarse, *reversum*, *pruddeni*, *festivum*, p. 156, *dorcato-moides*, *obesulum*, *granum*, *anthraz*, *affine*, p. 157, *modestum*, *fusciolae*, *pumilum*, p. 158, N. America, CASEY, t. c. n. spp.

Dermestes undulatus, early stages, XAMBEU, p. 143, Naturaliste xxii.

D. medialis, California, p. 141, *angustus*, Texas, p. 143, CASEY, J. N. York Ent. Soc. viii : n. spp.

Globicornis marginata, habits, FORMANEK, p. 78, Wien. ent. Zeit. xix.

G. (Hadrotoma) vaulogeri, Tunisia, PIC, p. 53, Echange xvi, n. sp.

Hadrotoma (Pseudomesalia subg. n.) *bodemeyeri*, Asia Minor, GANGLBAUER, p. 148, BODEMEYER (131), n. sp.

- Nathrenus* subg. n. of *Anthrenus* for *A. verbasci* L., CASEY, p. 161, J. N. York Ent. Soc. viii.
Novelis n. g. (with subg. n. *Paronovelsis* for *Attagenus varicolor* Jayne) for part of *Attagenus*, with *N. byturoides*, *uteana*, p. 148, *picta*, p. 149, n. spp., N. America, CASEY, t. c.
Orphilus chalybeus, Idaho, CASEY, p. 164, t. c. n. sp.
Paranovelsis subg. n. see *Novelis*.
Perimegatoma jaynei, *guadelupensis*, *ampla*, *nevadica*, *impressa*, p. 150, *monticola*, p. 151, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.
Trogoderma dichroa, Turkestan, REITTER, p. 219, Wien. ent. Zeit. xix; *T. serriger*, *pollens*, *complex*, *variipes*, *simulans*, p. 153, *virginica*, *oblongula*, *aspericollis*, *brevis*, *oboescens*, *advena*, p. 154, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.
Pseudomesalia subg. n., cf. *Hadrotoma*.

BYRRHIDÆ.

- Larva of *Byrrhus fasciatus*, KINCAID, p. 372, pl. xxiv, P. Washington Ac. ii.
Porcinolus murinus, varieties, FLEISCHER, p. 179, Wien. ent. Zeit. xix.
Simplicaria brevistriata, Spain, REITTER, p. 83, Deutsche ent. Zeitschr. 1900, n. sp.

PARNIDÆ.

- [Cf. ABEILLE & GROUVELLE (4), GROUVELLE (539, 540), WATERHOUSE (1383).]
Evolus galloprovincialis, France, ABEILLE, p. 137, Bull. Soc. ent. France 1900, n. sp.
Normandia n. g. for *Limnius villosocostatus* Reiche, PIC, p. 266, Bull. Soc. ent. France 1900.
Parygrus whiteheadi, Hainan Is., WATERHOUSE, p. 310, Ann. Nat. Hist. v, n. sp.
Riolus meridionalis, Montpellier, GROUVELLE, p. 137, Bull. Soc. ent. France 1900, n. sp.
Stenelmis clavareau, Congo, GROUVELLE, p. 425, Ann. Soc. ent. Belgique xliv; *S. weyersi*, Sumatra, GROUVELLE, p. 268, op. cit. xliv : n. spp.

HETEROGERIDÆ.

- [Cf. GAHAN (478), REITTER (1095), SAHLBERG (1143).]

- Heterocerus* (*Micromichilus* subg. n.) *minutissimus*, Amu Daria, p. 205, *H. niloticus*, Cairo, p. 206, *ahngeri*, Transcaspian, p. 207, SAHLBERG, Ofv. Finska Forh. xlii; *H. kulabensis*, Buchara, REITTER, p. 227, pl. ii, fig. 2, Wien. ent. Zeit. xix : n. spp.
Micromichilus subg. n., cf. *Heterocerus*.

LUCANIDÆ.

- [Cf. BORDAS (144), GAHAN (29), HELLER (573), JAKOWLEFF (649, 650), PLANET (1039, 1040), SHARP (1208).]

- Larvæ of *Pholidotus*, *Sclerostomus* etc., OHAUS, p. 223 etc., Ent. Zeit. Stettin lxi.

- Aegus specularis*, Cochin China, p. 633, *hamatus*, Borneo, p. 635, *planeti*, New Guinea, p. 637, JAKOWLEFF, Horæ Soc. ent. Ross. xxiv; *A. sculpticollis*, p. 8, pl. fig. 9, *punctithorax*, p. 9, fig. 8, Celebes, HELLER, Abh. Mus. Dresden ix, No. 5 : n. spp.
- Auxicerus aethiops*, Bolivia, JAKOWLEFF, p. 38, Horæ Soc. ent. Ross. xxiv, n. sp.
- Eurytrachelus intermedius*, mandibular developments, SHARP in Willey's Results iv, p. 382, pl. xxxv, figg. 3a-d.
- Figulus rossi*, Christmas Is., GAHAN, p. 96, Mon. Christmas Island, n. sp.
- Hemisodoruscus semenowi*, Setschuen, JAKOWLEFF, p. 36, Horæ Soc. ent. Ross. xxiv, n. sp.
- Leptinopterus elegans*, Brazil, JAKOWLEFF, p. 632, t. c. n. sp.
- Lucanus* and *Pseudolucanus*; monograph continued, PLANET, Naturaliste xxii, pp. 46 etc.; *L. cervus*, note on habits, PIC, p. 108, Bull. Soc. ent. France 1900.
- L. singularis* ♀, E. India ?, PLANET, Naturaliste xxii, p. 11, n. sp.
- Nigidius taurus*, Philippines, JAKOWLEFF, p. 640, Horæ Soc. ent. Ross. xxiv, n. sp.
- Paraeetus listeri*, pl. xi, figg. 1, 2, p. 96, GAHAN, Mon. Christmas Island, n. sp.
- Pseudaeetus* n. g., p. 7, for *P. leptodon* n. sp., Celebes, p. 8, pl. fig. 10, HELLER, Abh. Mus. Dresden ix, No. 5.
- Pseudolucanus mnizechi*, E. India, PLANET, p. 96, Naturaliste xxii, n. sp.

PASSALIDÆ.

[Cf. BLACKBURN (125), GAHAN (478), HELLER (573), OHAUS (956).]

- Stridulatory organs : Larvae of *Passalidae*, habits, relations to parents etc., OHAUS (956, pp. 164 etc.)
- Gnaphalocnemis* n. n. for *Eriocnemis* Kaup., HELLER, p. 10, Abh. Mus. Dresden ix, No. 5.
- Mastochilus*: the Australian species, BLACKBURN, pp. 207-209, P. Soc. Victoria xii.
- M. capitalis*, N. S. Wales, id. p. 209, t. c. n. sp.
- Plestherus mandibularis*, Celebes, HELLER, p. 11, pl. fig. 5, Abh. Mus. Dresden ix, No. 5, n. sp.

SCARABÆIDÆ.

[The following memoirs relate to *Scarabaeidae*, viz. :—ARROW (35, 36), BLACKBURN (123, 124, 125), BORDAS (144), BRAUNS (171), BRENSKE (177 to 182, 131, 574), CHAMPENOIS (234), CLOUËT DES PESRUCHES (260 to 262), FAIRMAIRE (389, 391), GAHAN (478), GESTRO (494), HELLER (573), KOLBE (747, 748, 751), KRAATZ (772), OHAUS (954-956), OLSEOUFIEW (962), D'ORBIGNY (963), PIC (1036), RABES (1067), REITTER (1092, 1099, 1101), SEMENOW (1193, 1194), SHARP (1208), TARNANI (1305), XAMBEU (1420); see also *Cetonüni*, p. 144.]

Larvae and larval habits of various Lamellicorns, specially of *Rutelidae*, OHAUS (956).

Stridulating organs, GAHAN (478).

Coprini.

Aphodius moscoviticus, Russia, SEMENOW, p. 91, Horæ Soc. ent. Ross. xxiv; *A. (Orothaliscus) subg. n.) rotundangulus*, Russia, REITTER, p. 84, Deutsche ent. Zeitschr. 1900; *A. (Bodilus) holdereri*, p. 155.

- A. (Plagiogonus) culminarius*, p. 156, *A. (Agrilinus) virginialis*, *A. (Volinus) bistriga*, p. 157, *forsteri*, p. 158, pl. i, fig. 2, Chinese centr. Asia, REITTER, Wien. ent. Zeit. xix : n. spp.
Cephalodesmus minor, N. S. Wales, BLACKBURN, p. 36, Tr. R. Soc. S. Austral. xiv, n. sp.
Chironitis socotranus, Sokotra, GAHAN, p. 10, Bull. Liverp. Mus. iii, n. sp.
Corythoderus marshalli, S. Africa, BRAUNS, p. 164, pl. ix, Ann. Hofmus. Wien xv, n. sp.
Epilinus; habits, CLOUËT, p. 123, Bull. Soc. ent. France 1900.
Gymnopleurus levis, Somaliland, ARROW, p. 23, P. Zool. Soc. London 1900, n. sp.
Labroma horrene, characters, BLACKBURN, p. 37, Tr. R. Soc. S. Austral. xiv.
Lethrus dinotherium litvinovi, subsp. n., SEMENOW, p. 308, Horae Soc. ent. Ross. xxxiv; *L. apterus*, habits etc., TARNANI (1305); *L. apterus*, notes on, TARNANI, p. 49, Illustr. Zeitschr. Ent. v.
Ochoderus inscutellaris, Palestine, PIC, Frelon viii, sep. pag. p. 6; *O. euxinus*, Tauria, SEMENOW, p. 93, Horae Soc. ent. Ross. xxxiv : n. spp.
Odontoderus n. g. for *Atenius spinicollis* Har. and *O. gestroi*, p. 249, *oberthuri*, p. 250, n. spp., W. Africa, CLOUËT, Ann. Soc. ent. Belgique xliv.
Onthophagides: D'ORBIGNY publishes a supplement to his palæarctic synopsis, with numerous remarks on localities & synonymy, Abeille xxix, pp. 289–300.
Onthophagus orcas = (*felschei* Reitt.), p. 273, *tricuspidis* and *lemuroides* distinguished, p. 274, OLSONEW, Annuaire Mus. St. Petersb. v.
O. tricuspidis, Caucasus, SEMENOW, p. 94, Horae Soc. ent. Ross. xxxiv; *O. pentaceros*, p. 266, *d'orbignyi*, p. 268, Persia, *hypertropis*, Marghelan, p. 269, *persianus*, Persia, p. 270, [cf. also *Tauronthophagus*], OLSONEW, Annuaire Mus. St. Petersb. v : n. spp.
Orodalius subg. n. cf. *Aphodius*.
Panulus arthuri, Australia, BLACKBURN, p. 211, P. Soc. Victoria xii, n. sp.
Platyphymania squalidus ♀, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xiv.
Peammodius gestroi, Burma, CLOUËT, p. 13, Ann. Soc. ent. Belgique xliv, n. sp.
Rhyssemorphus n. g. near *Rhyssenus*, for *R. mocquerysi* n. sp., Madagascar, FAIRMAIRE, p. 122, Bull. Soc. ent. France 1900, n. sp.
Sicardius peammodiiformis, redescribed, CLOUËT, p. 14, Ann. Soc. ent. Belgique xliv.
Tauronthophagus kachowskyi, Somaliland, OLSONEW, Annuaire Mus. St. Petersb. v, n. sp.
Trox expansus, Somaliland, ARROW, p. 22, pl. 1, fig. 16, P. Zool. Soc. London 1900, n. sp.

Glaphyrini.

- Amphicoma vulpes*, var. n. *mixta*, BRANCSIK, p. 99, Jahresh. Ver. Trencsen. xxi.
A. (Eulasia) speciosa, Syria, Persia, CHAMPENOIS, p. 248, Bull. Soc. ent. France 1900; *A. belia*, Buchara, REITTER, p. 53, Deutsche ent. Zeitschr. 1900 : n. spp.
Arrhephora; is the ♀ of *Toxocerus*, FAIRMAIRE, p. 618, Ann. Soc. ent. France lxviii.

Tesocerous latouchei, China, FAIRMAIRE, p. 617, Ann. Soc. ent. France lxviii, n. sp.

Melolonthini.

BRENSKE (177) continues his monograph of *Serica*.

The African genera of *Sericides*, tabulation, with new genera and division into two tribes, *Sericinæ*, *Trochalincæ*, BRENSKE, Berlin. ent. Zeitschr. xliv, pp. 71–82.

The *Melolonthidae* of Ceylon, BRENSKE (178).

Anacheirotes n. g. *Sericidarium*, p. 39, for *A. inornatus*, n. sp., S. Australia, p. 40, BLACKBURN, Tr. R. Soc. S. Austral. xxiv.

Apogonia rauca var. *n. unistriata*, *A. comosa* var. *n. lindisfana*, BRENSKE, p. 348, Ent. Zeit. Stettin lxi; *A. destructor*, natural history, ZEHNTNER (1426).

A. nodosa, with var. *geniculata*, Sumatra, BRENSKE, p. 146, Mem. Soc. ent. Belgique vii, n. sp.

Autoserica stupida, Madagascar, BRENSKE, p. 52, Berlin. ent. Zeitschr. 1900; *A. prabangana*, *eluctabilis*, p. 414, *eclogaria*, *atavana*, p. 415, Cambodia, BRENSKE, Bull. Mus. Paris 1899; *A. weigamana*, Ceylon, BRENSKE, p. 346, Ent. Zeit. Stettin lxi : n. spp.

A. weyersi, Sumatra, BRENSKE, p. 142, Mem. Soc. ent. Belgique vii : n. spp.

Brahmina brenskei, Nanschan, REITTER, p. 158, Wien. ent. Zeitschr. xix, n. sp.

Charioserica n. g. for *C. striata*, n. sp., Madagascar, BRENSKE, p. 47, Berlin. ent. Zeitschr. xlvi.

Comaserica hildebrandti, *bergrothi*, p. 39, *mocquerysi*, p. 41, *discolor*, p. 42, *aurita*, p. 43, *foveicollis*, p. 44, Madagascar, BRENSKE, t. c. n. spp.

Cyphoserica n. g. for *C. mukengiana*, n. sp. Africa, BRENSKE, p. 85, t. c.

Delphinobius n. g. near *Hoplia* for *D. cotteri* n. sp. Madagascar, FAIRMAIRE, p. 241, Ann. Soc. ent. Belgique xlvi.

Ectinoplia lateristrigata, *guttaticollis*, China, FAIRMAIRE, p. 620, Ann. Soc. ent. France lxviii, n. spp.

Eriphoserica n. g. p. 62, for *E. camentoides*, n. sp. Madagascar, p. 63, BRENSKE, Berlin. ent. Zeitschr. xlvi.

Euphoresia n. g. *Sericinæ*, p. 86, with *E. buttneri*, p. 88, *pygialis*, p. 89, *benitoensis*, p. 90, *multipunctata*, p. 91, *metasternalis*, p. 92, *semnionis*, p. 93, *kossoviana*, *canderei*, p. 96, Africa, n. spp., BRENSKE, t. c.

Glyphaeserica n. g. p. 52, for *G. humeralis*, n. sp. Madagascar, p. 53, BRENSKE, t. c.

Glycyserica n. g. p. 48, for *G. depravata*, n. sp. Madagascar, p. 49, BRENSKE, t. c.

Heteronyx uniculus, S. Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxiv; *H. grandis*, Victoria, BLACKBURN, p. 113, t. c. : n. spp.

Heteroserica n. g. for *H. paradoxa*, n. sp. Madagascar, BRENSKE, p. 64, Berlin. ent. Zeitschr. 1900.

Holotrichia moffatii, p. 148, *weyersi*, *deliana*, p. 149, Sumatra, BRENSKE, Mem. Soc. ent. Belgique vii; *H. pretiosa*, Amboina, BRENSKE, p. 624, Semon Forschungereise, v : n. spp.

Hoplia amara, Sumatra, BRENSKE, p. 142, Mem. Soc. ent. Belgique vii, n. sp.

Hoplosternus, species grouped, BRENSKE, p. 154, t. c.

H. weyersi, Sumatra, id. p. 152, t. c. n. sp.

Lachnostenra patens, p. 175, *latens*, p. 176, St. Vincent, *trinitatis*, Trinidad, p. 182, ARROW, Tr. ent. Soc. London 1900, n. spp.

Lasiopsis koltzei, Turkestan, REITTER, p. 52, Deutsche ent. Zeitschr. 1900, n. sp.

- Lepidiota oblonga*, Thursday Island, p. 622, *semonis*, *maculata*, New Guinea, *crinita*, Queensland, p. 623, BRENSKE, Semon *Forschungsreisen* v, n. spp.
- Leucopholis horni*, Ceylon, BRENSKE, p. 355, Ent. Zeit. Stettin lxi, n. sp.
- Listronyx antarcticus*, p. 109, *hirsutus*, p. 110, Patagonia, BRENSKE, Ann. Soc. ent. Belgique xliv, n. spp.
- Melolontha vulgaris* var. n. *asiatica*, BRENSKE, p. 151, BODEMEYER (131).
- Microtrichia* n. g. p. 345, for *M. puttalamensis*, n. sp. Ceylon, p. 360, BRENSKE, Ent. Zeit. Stettin lxi.
- Neosericia moffatii*, Sumatra, BRENSKE, p. 143, Mem. Soc. ent. Belgique vii; *N. pavieana*, Cambodia, BRENSKE, p. 416, Bull. Mus. Paris 1899 : n. spp.
- Ocnodeus lepidus*, S. Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Odontria zealandica* and *striatum*, injurious habits, SMITH, p. 11, Entomologist xxxiii.
- Oxyserica* n. g. for *O. pygidialis*, n. sp. Madagascar, BRENSKE, p. 58, Berlin. ent. Zeitschr. xlvi.
- Parthenoserica* n. g. for *P. sulcata*, n. sp. Madagascar, BRENSKE, p. 50, t. c.
- Pentelia crinita*, Sumatra, BRENSKE, p. 151, Mem. Soc. ent. Belgique vii, n. sp.
- Philacolota* n. g. p. 11, near *Schonherria* but aberrant, for. *P. submaculata*, p. 12, pl. fig. 21, Celebes, *sulana* Sula Mangoli, p. 13, n. spp., HELLER, Abh. Mus. Dresden ix, No. 5.
- Phylloserica* n. g. p. 65, for *Pleophylla unicolor*, *brenskei* and *P. candaezi*, n. sp. Madagascar, p. 67, BRENSKE, Berlin. ent. Zeitschr. 1900.
- Plesioserica* n. g. for *P. viridula*, n. sp. Madagascar, BRENSKE, p. 46, t. c.
- Plectris lignicola*, *fungicola*, St. Vincent, ARROW, Tr. ent. Soc. London 1900, n. spp.
- Plotopuserica* n. g. for *P. darwiniana*, n. sp. Madagascar, BRENSKE, p. 59, Berlin. ent. Zeitschr. 1900.
- Plusioserica* n. g. for *Omaloplia virescens* (Künck.) n. sp., Madagascar, BRENSKE, p. 45, t. c.
- Polyphylla*; revision of species, pp. 312–319; *P. laticollis mandshuricus* subsp. n. p. 308; *P. alba vicaria* subsp. n. p. 309, SEMENOW, Horae Soc. ent. Ross. xxxiv.
- P. schestakovi*, Chinese Turkestan, SEMENOW, p. 310, t. c. n. sp.
- Pseudoserica* n. g. p. 60, for *P. amana* n. sp., Madagascar, p. 61, BRENSKE, Berlin. ent. Zeitschr. xlvi.
- Pseudotrematoidea* a valid genus, *P. frivaldszkyi* note, BRENSKE, p. 150, BODEMEYER (131).
- Rhizotrogus bodemeyeri*, Asia minor, BRENSKE, p. 150, BODEMEYER (131), n. sp.
- Schizonycha nigrofusca*, Somaliland, ARROW, p. 24, P. Zool. Soc. London 1900; *S. singhalensis*, Ceylon, BRENSKE, p. 350, Ent. Zeit. Stettin lxi : n. spp.
- Scitala pruinosa*, *impressa*, Queensland, BRENSKE, Semon *Forschungsreisen* v, p. 622, n. spp.
- Sinochelus limbatus*, p. 618, *cinctipennis*, p. 619, China, FAIRMAIRE, Ann. Soc. ent. France lxviii, n. spp.
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BUPRESTIDÆ.

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- Callimiora collaris*, p. 350, *pygmæa*, p. 351, Goyaz, KERREMANS, t. c. n. spp.
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- Castalia*, the valid species, KERREMANS, p. 309, t. c.
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- Demostis* n. g. for *Amorphosoma elongatum* Kerr. [above], KERREMANNS, p. 322, Ann. Soc. ent. Belgique xliv.
- Diadora* n. g. for *Amorphosoma gibbicollis*, *lutea*, KERREMANNS, p. 323, t. c.
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- p. 86, KERREMANS, t. c.; *E. subcornutus*, New Guinea, KERREMANS, p. 344, Ann. Soc. ent. Belgique xliiv; *E. sulcicollis*, Celebes, HELLER, p. 13, pl., fig. 6, Abb. Mus. Dresden ix, No. 5 : n. spp.
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- Pectilonota cyanipes* Say = (*debilis* Lec.), KERREMANNS, p. 294, t. c.
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- Taphrocerus cupriceps*, Goyaz, KERREMANS, p. 344, t. c.; *T. bifasciatus*,
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- Thrinopyge* and species redefined, KERREMANS, pp. 307–309, t. c.
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Adelocera grisea, Buchara, SCHWARZ, p. 98, Deutsche ent. Zeitschr. 1900, n. sp.

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Agelaeinus antennalis, Peru, SCHWARZ, p. 354, t. c. n. sp.

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Agriotes constrictus, Asia Minor, REITTER, p. 86, Deutsche ent. Zeitschr. 1900, n. sp.

Agrypnus longicornis, Somaliland, GAHAN, p. 26, pl. i, fig. 11, P. Zool. Soc. London 1900, n. sp.

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Anchastomorphus sexmaculatus, Goyaz, SCHWARZ, p. 328, Deutsche ent. Zeitschr. 1900, n. sp.

Anchastus discordans, Christmas Is., WATERHOUSE, p. 100, Mon. Christmas Island; *A. latus*, E. Africa, *semistriatus*, Cameroons, SCHWARZ, p. 151, Deutsche ent. Zeitschr. 1900; *A. ferrugineipennis*, Borneo, *zambianus*, Congo, CANDÈZE, p. 91, Ann. Soc. ent. Belgique xliv : n. spp.

Anoplischius dorsalis, Mexico, SCHWARZ, p. 310, Deutsche ent. Zeitschr. 1900; *A. conicus, anemicus*, Bolivia, CANDÈZE, p. 84, Ann. Soc. ent. Belgique xliv : n. spp.

Arrhaphes apicalis, Sumatra, SCHWARZ, p. 94, Deutsche ent. Zeitschr. 1900, n. sp.

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Atractosomus nigerrimus, Mexico, SCHWARZ, p. 312, Deutsche ent. Zeitschr. 1900, n. sp.

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- Chrosis angusticollis*, Victoria, BLACKBURN, p. 114, Tr. R. Soc. S. Austral. xxiv, n. sp.
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- Corymbites altaicus*, p. 110, *tibialis*, p. 111, Altai, SCHWARZ, Deutsche ent. Zeitschr. 1900; *C. thibeticus*, Tibet, p. 95, *fallaciosus*, Kashmir, *exotans*, Punjaub, *suavis*, Tasmania, *australicus*, Australia, p. 96, CANDÈZE, Ann. Soc. ent. Belgique xliv : n. spp.
- Cosmesus bimaculatus*, p. 347, *fuscoapicalis*, *apicalis*, p. 348, *luteipes*, Brazil, *robustus*, Peru, 349, *maculipennis*, p. 350, *flavovittatus*, Brazil, *adrastroides*, Peru, p. 351, *annulatus*, p. 352, *inscriptus*, *discicollis*, p. 353, Brazil, SCHWARZ, Deutsche ent. Zeitschr. 1900, n. spp.
- Crepidius blepharipes*, Mexico, SCHWARZ, p. 311, t. c.; *C. ornatus*, Peru, CANDÈZE, p. 85, Ann. Soc. ent. Belgique xliv : n. spp.
- Cryptohypnus*, the European, DU BUYSSEN (215) with *Archapila* subg. n., pp. 227 & 247, for *C. brucki* Cand.; *C. littoralis*, larva, KINCAID, p. 375, pl. xxv, figg. 1, 2, P. Washington Ac. ii.
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- Deromecus niger*, Chili, SCHWARZ, p. 329, t. c.; [*Deromerus*] *anthracinus*, *vittipennis*, Chili, CANDÈZE, p. 91, Ann. Soc. ent. Belgique xliv : n. spp.
- Diploconus nigriceps*, Sumatra, SCHWARZ, p. 95, Deutsche ent. Zeitschr. 1900; *D. nitidicollis*, Celebes, p. 341, *basalis*, Sumatra, p. 342, *ruficollis*, New Guinea, p. 343, SCHWARZ, t. c. : n. spp.
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- Hapatesus jugulatus*, Australia, CANDÈZE, p. 97, Ann. Soc. ent. Belgique xliv, n. sp.
- Hemirhipus scriptus*, Surinam, CANDÈZE, p. 81, t. c. n. sp.
- Heteroderes lineolus*, p. 359, *dorsalis*, p. 360, W. Africa, SCHWARZ, Deutsche ent. Zeitschr. 1900; *H. nigrofasciatus*, p. 146, *ferrugineus*, *inornatus*, p. 147, *opaculus*, *cuneolus*, p. 148, Trop. Africa, SCHWARZ, t. c. : n. spp.
- Hypnoides musculus*, larva, KINCAID, p. 374, pl. xxv, figg. 3–7, P. Washington Ac. ii.
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- Lacon aequalis*, Kashmir, CANDEZE, p. 78, t. c.; *L. sardinensis*, S. Australia, BLACKBURN, p. 49, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Limonius crassipes*, Turkey, SCHWARZ, p. 105, Deutsche ent. Zeitschr. 1900; *L. nigrinus*, Kashmir, *collaris*, New S. Wales, CANDEZE, p. 94, Ann. Soc. ent. Belgique xliv : n. spp.
- Lycoreus alluaudi*, Madagascar, CANDEZE, p. 79, t. c.; *L. imperialis*, Madagascar, SCHWARZ, p. 302, Deutsche ent. Zeitschr. 1900 : n. spp.
- Megapenthes asperulatus*, Burma, CANDEZE, p. 88, Ann. Soc. ent. Belgique xliv; *M. spinipennis*, *lacer*, Sumatra, SCHWARZ, p. 91, Deutsche ent. Zeitschr. 1900; *M. andrewsi*, Christmas Is., WATERHOUSE, p. 101, pl. x, fig. 7, Mon. Christmas Island : n. spp.
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- Melanoxanthus* and *Megapenthes* not distinct, SCHWARZ, p. 320, Deutsche ent. Zeitschr. 1900.
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- Melanoides niger*, E. Africa, SCHWARZ, p. 146, Deutsche ent. Zeitschr. 1900, n. sp.
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- Monadicus biguttatus*, Bolivia, CANDEZE, p. 92, Ann. Soc. ent. Belgique xliv, n. sp.
- Monocrepidius minusculus*, Sumatra, SCHWARZ, p. 90, Deutsche ent. Zeitschr. 1900; *M. bipartitus*, p. 313, *peruanus*, p. 314, *lituratus*, p. 315, Peru, *sextitatus*, p. 316, Colombia, SCHWARZ, t. c.; *M. laceratus*, Goyaz, CANDEZE, p. 85, Ann. Soc. ent. Belgique xliv : n. spp.
- Oistus submetallicus*, Costa Rica, CANDEZE, p. 83, t. c. n. sp.
- Parapomachilius* n. g., p. 356, for *P. incertus*, Brazil, p. 339, *ambiguus*, Paraguay, p. 340, n. spp., SCHWARZ, Deutsche ent. Zeitschr. 1900.
- Paraspheles quinquesulcatus*, p. 114, *bicolor*, p. 115, Victoria, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. app.
- Phedomenus scriptus*, Madagascar, FLEUTIAUX, p. 368, Bull. Mus. Paris 1900, n. sp.
- Pleonomus laticornis*, Buchara, REITTER, p. 88, Ent. Nachr. xxvi, n. sp.
- Pomachilioides* n. g., p. 356, for *P. cruciatus*, p. 344, *dimidiatus*, p. 345, *basalis*, *melanurus*, p. 346, n. spp., Peru, SCHWARZ, Deutsche ent. Zeitschr. 1900.
- Pomachilius angustulus*, Bolivia, CANDEZE, p. 91, Ann. Soc. ent. Belgique xliv; *P. sulcifrons*, p. 330, *maculifrons*, p. 331, *marginalis*, p. 332, *spinosis*, p. 333, Peru, *discicollis*, *quadrimaculatus*, p. 334, *sexfasciatus*, p. 335, Brazil, *apicalis*, Peru, *pullus*, p. 336, *pusillus*, p. 337, Ecuador, *agrioides*, p. 338, *hamatus*, p. 339, Brazil, SCHWARZ, Deutsche ent. Zeitschr. 1900 : n. spp.
- Pristilophus madagascariensis*, Madagascar, FLEUTIAUX, p. 369, Bull. Mus. Paris 1899, n. sp.
- Psephus major*, *feralis*, Centr. Africa, *orientalis*, Philippines, CANDEZE, p. 83, Ann. Soc. ent. Belgique xliv, n. spp.

- Psiloniscus quadrilineatus*, Mexico, SCHWARZ, p. 328, Deutsche ent. Zeitschr. 1900, n. sp.
- Semiotus intermedius* var. n. *delineatus*, CANDÈZE, p. 82, Ann. Soc. ent. Belgique xlii.
- S. sanguinolentus*, Bolivia, *exsolutus*, *flavangulus*, Colombia, p. 82, CANDÈZE, t. c.; *S. nigrolineatus*, Brazil, *antennatus*, Colombia, SCHWARZ, p. 306, Deutsche ent. Zeitschr. 1900 : n. spp.
- Spheniscosomus permacer*, Sumatra, CANDÈZE, p. 94, Ann. Soc. ent. Belgique xlii, n. sp.
- Spilus crassus*, Brazil, CANDÈZE, p. 84, t. c. n. sp.
- Stenopus* n. g. near *Heterocrepidius*, p. 307, for *S. angustus*, *elongatus*, p. 308, *ruberipennis*, p. 309, n. spp., Cauca Valley, SCHWARZ, Deutsche ent. Zeitschr. 1900.
- Tabula* n. g. near *Glypheus*, p. 367, for *T. depressissima* n. sp., Madagascar, p. 368, FLEUTIAUX, Bull. Mus. Paris 1899.
- Tetrigus murrayi*, Christmas Is., WATERHOUSE, p. 100, Mon. Christmas Island, n. sp.
- Tilotarsus opacus*, p. 78, *adeloceroides*, p. 79, W. Africa, CANDÈZE, Ann. Soc. ent. Belgique xlii, n. spp.
- Trieres* n. g. near *Myrmodes*, for *T. ramitarsus* n. sp., Australia, CANDÈZE, p. 78, t. c.

CEBRIONIDÆ.

Subterranean movement of larvae, BOURGEOIS (161).

Genecerus referred to *Dascillidae*, q. v., GAHAN, p. 27, P. Zool. Soc. London 1900.

RHIPICERIDÆ.

- Ennometes*, a valid genus; *Callirhipis ruifornis* Gray, referred to it, BLACKBURN, p. 50, Tr. R. Soc. S. Austral. xxiv.
- Rhipidocera mystacina* and *femoralis* distinguished, BLACKBURN, p. 50, Tr. R. Soc. S. Austral. xxiv.
- Sandalus bourgeoisi*, China, THÉRY, p. 33, Naturaliste xxii; *S. chinensis*, China, FAIRMAIRE, p. 623, Ann. Soc. ent. France lxxviii : n. spp.

DASCILLIDÆ.

Genecerus nebulosus, Somaliland, GAHAN, p. 26, pl. i, fig. 9, P. Zool. Soc. London 1900, n. sp.

Microcara fuegensis, Patagonia, BOURGEOIS, p. 111, Ann. Soc. ent. Belgique xlii, n. sp.

MALACODERMIDÆ.

[Cf. ABEILLE (1, 2), BLACKBURN (123, 124), BORDAS (144), BOURGEOIS (131, 154–160, 162–164), FAIRMAIRE (389, 396), GAHAN (479, 480), GORHAM (512), OLIVIER (957–961), PIC (1009, 1010, 1021, 1023–1026, 1034), REITTER (1092, 1101), SCHILSKY (1154), SHARP (1208), UHAGON (1346), XAMBEU (1420).]

Solier's types of *Lampyrides* referred to modern genera, OLIVIER, pp. 371, 372, Bull. Mus. Paris 1899.

Problematic Lycid larvae described and discussed, pp. 77–79; a luminous larva or adult ♀ *Lampyrid*, pp. 79, 80, HANITSCH, J. Straits Asiat. Soc., No. 34.

- Remarkable Lycid or Lampyrid larva, pp. xxxv, figg. 4-4b, p. 383, SHARP, in Willey Results iv.
- An aquatic Lampyrid, ANNANDALE, p. 862, P. Zool. Soc. London 1900.
- Acantholyicus integer*, Congo, BOURGEOIS, p. 141, Ann. Soc. ent. Belgique xliiv, n. sp.
- Anoxodes* n. g. near *Charopus*, for *A. albicauda*, p. 164, *longiventris*, p. 165, n. spp. S. Africa, ABEILLE, Rev. Ent. franc. xix.
- Anthocomus apricus*, Natal, GORHAM, p. 78, Ann. Nat. Hist. v, n. sp.
- Apalochrus nitens*, Mashonaland, GORHAM, p. 80, t. c. n. sp.
- Attalus coloratus* var. n. *moraguesi*, p. 336, *abeillei* n. n. for *jocosus* Peyr. p. 352, UHAGON, An. Soc. Espan. xxix.
- Attalus atrocyaneus*, p. 339, *lauferi*, p. 341, Spain, UHAGON, t. c.; *A. abeillei*, Tunisia, PIC, p. 53, Echange xvi; *A. (Mixis) simoni, exquisitus*, S. Africa, p. 176, *bizonatus*, Senegal, p. 177, ABEILLE, Rev. Ent. franc. xix; *A. ornatipennis*, Mashonaland, GORHAM, p. 77, Ann. Nat. Hist. v, n. spp.
- Culochromus cucullatus*, p. 58, *simillimus*, p. 57, *rostratus*, p. 58, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.
- Calopteron gloriaeum, textile*, Ecuador, BOURGEOIS, p. 662, Ann. Soc. ent. France lxviii, n. spp.
- Cantharis*; for numerous varr. ? new, of palaeartic, see PIC, pp. 85, 86, Echange xvi; *C. discoidea* var. n. *carreti*, BOURGEOIS, p. 181, Bull. Soc. ent. France 1900; *C. livida* varr. n. *adusta cilicensis*, BOURGEOIS, p. 152, Bodemeyer (131).
- C. tuniseus*, Tunis, PIC, p. 86, Echange xvi, ? n. sp.; *C. anatolica*, p. 151, *bodemeyeri*, p. 152, *eurynota*, p. 153, Asia Minor, BOURGEOIS, Bodemeyer (131); n. spp.
- Cautires confluens*, N. Guinea, BOURGEOIS, p. 420, Ann. Mus. Genova xl, n. sp.
- Chætomalachius aeneus*, xxxvii 5, *staudingeri*, 6, Buchara, SCHILSKY, Käf. Eur., n. spp.
- Chalcas fairmairei*, Orinoco, BOURGEOIS, p. 118, Bull. Soc. ent. France 1900, n. sp.
- Chalicorus* = (*Cephaloncus* Westw. = *Troglicucus* PEYR.), ABEILLE, p. 170, Rev. Ent. franc. xix.
- C. ferox*, 3-guttatus, S. Africa, id. t. c. p. 169.
- Charopus cyanopterus*, Natal, GORHAM, p. 75, Ann. Nat. Hist. v, n. sp.
- Charliognathus scabripennis*, Colombia, BOURGEOIS, p. 118, Bull. Soc. ent. France 1900, n. sp.
- Colotes hispanus*, Granada, UHAGON, An. Soc. Espan. xxix, p. 39; *C. sellatus*, S. Africa, ABEILLE, p. 165, Rev. Ent. franc. xix; *C. contaminatus*, Ceylon, ABEILLE, p. 178, t. c. n. spp.
- Colpometopos* n. g. near *Cyrtosus*, p. 170, for *C. pithecius* n. sp., S. Africa, p. 171, ABEILLE, t. c.
- Danacea tristis*, Turkestan, 9, *spinicollis*, Syria, 10, SCHILSKY, Käf. Eur. xxxvii; *D. albella*, Anatolia, REITTER, p. 86, Deutsche ent. Zeitschr. 1900 : n. spp.
- Darytes incrassatus* Algeria, xxxvii, 1, *altaicus*, Altai, xxxvii, 2, SCHILSKY, Käf. Eur. n. spp.
- Dasytiscus vestitus* var. *henoni*, PIC, p. 88, Echange xvi.
- D. (Haplorthrix) vagus*, xxxvii, 8, ? Mediterranean, SCHILSKY, Käf. Eur. n. sp.
- Diaphanes mammosus*, Sumatra, OLIVIER, p. 235, Ann. Soc. ent. Belgique xli; *D. seminudus, wroughtoni*, India, OLIVIER, p. 47, Bull. Soc. ent. France 1900; *D. wroughtoni* ♂, *D. seminudus* ♀, figures, DU BUYSSE, p. 426, J. Bombay Soc. xiii : n. spp.
- Dinometopos* n. g. *Melyridæ*, for *D. natalensis*, n. sp., ESTCOURT, GORHAM p. 76, Ann. Nat. Hist. v.

- Ebaeus nanschanensis*, Centr. Asia, REITTER, p. 160, Wien. ent. Zeitschr. xix, n. sp.
- Haplocnemus alluaudi*, Tunis, PIC, p. 165, Bull. Soc. ent. France 1900, n. sp.
- Haplolycus ustus* var. n. *tschoffeni*, BOURGEOIS, p. 145, Ann. Soc. ent. Belgique xliv.
- Hedybius anceps*, *marshalli*, Natal, GORHAM, p. 81, Ann. Nat. Hist. v; *H. simoni*, p. 171, *longicoxis*, *sycophanta*, p. 172, *prænotatus*, *fasciculatus*, p. 173, *maculifer*, p. 174, S. Africa, ABEILLE, Rev. Ent. franc. xix : n. spp.
- Idgia foveifrons*, Formosa, FAIRMAIRE, p. 629, Ann. Soc. ent. France lxviii, n. sp.
- Illops corniculatus* = (*Malachius trabeatus* Fairm.), ABEILLE, p. 170, Rev. Ent. franc. xix.
- Lainus tibialis*, Christmas Is., GAHAN, p. 102, pl. x, fig. 4, Mon. Christmas Island, n. sp.
- Lampyris tinctoria*, *imbecilla*, S. Africa, GORHAM, p. 84 Ann. Nat. Hist. v, n. spp.
- Lecontea* n. n. for *Pyractomena* Lee. nec Sol., OLIVIER, p. 371, Bull. Mus. Paris 1899.
- Lucidina clavareaui*, Sumatra, OLIVIER, p. 234, Ann. Soc. ent. Belgique xliv, n. sp.
- Lucidota simoni*, Venezuela, OLIVIER, p. 62, Ann. Soc. ent. France lxix, n. sp.
- Luciola lusitanica*, larva and female, P. GROUVELLE, p. 315, Bull. Soc. ent. France 1900; *L. picea*, larva, OLIVIER, p. 236, Ann. Soc. ent. Belgique xliv.
- L. cavigriffons*, Madagascar, with larva, FAIRMAIRE, pp. 361, 362, Bull. Soc. ent. France 1900; *L. recticollis*, Sumatra, OLIVIER, p. 237, Ann. Soc. ent. Belgique xliv : n. spp.
- Lycus distantii* ♀, GORHAM, p. 83, Ann. Nat. Hist. v; *L. obtusatus* var. n. *flavicans*, BOURGEOIS, p. 144, Ann. Soc. ent. Belgique xliv; *L. latissimus* var. n. *mocquerysi*, BOURGEOIS, p. 658, Ann. Soc. ent. France lxviii; *L. rufosternalis* Bl. referred to *Erriclasses*, BOURGEOIS, p. 432, Ann. Mus. Genova xl; *L. latissimus* var. n. *decoloratus*, BOURGEOIS, p. 141, Ann. Soc. ent. Belgique xliv, cf. also *Acantholyces*, *Haplolycus*.
- Lycus duvivieri*, Congo, BOURGEOIS, p. 142, Ann. Soc. ent. Belgique xliv; *L. cornipennis*, p. 659, *prodigiosus*, p. 660, Sierra Leone, *L. (Lopholyces) staudingeri*, p. 658, Africa, *L. (Thoracocalon) brevirostris*, Ecuador, p. 661, BOURGEOIS, Ann. Soc. ent. France lxviii : n. spp.
- Lygistopterus oberthuri*, p. 664, *fastuosus*, p. 665, Bolivia, BOURGEOIS, t. c. n. spp.
- Malachius montanus* var. n. *viridistratus*, BOURGEOIS, p. 156, Bodemeyer (131).
- Malchinus obscuripes*, Constantinople, PIC, p. 87, Echange xvi, n. sp.
- Malthinus*; characters of numerous European, BOURGEOIS, pp. 91–94, Bull. Soc. ent. France 1900; *M. pallidipennis* var. *laterifus*, *batnensis* var. *atriceps*, PIC, p. 54, Echange xvi; *M. maritimus* redescribed, PIC, p. 384, Bull. Soc. ent. France 1900.
- M. laticollis*, *mathieui*, Algeria, p. 14, *maculipennis*, Syria, *batnensis*, *pallidipennis*, Algeria, p. 15, PIC, Bull. Soc. zool. France xxv; *M. externus*, Algeria, *caifensis*, Syria, *rosinæ*, Asia Minor, PIC, p. 37, Echange xvi; *M. brevior*, p. 54, *tamarisci*, p. 55, Algeria, PIC, t. c.; *M. algericus*, Rio-Salado, PIC, p. 19, t. c. n. sp.?; *M. kraatzi*, Spain, *delagrangeri*, Syria, PIC, p. 61, t. c.; *M. (Progentes) incrassicornis*, p. 86, *femoralis*, Algeria, *scriptipennis*, Spain, p. 87, PIC, t. c. n. spp.?; *M. varus*, Algeria, BOURGEOIS, p. 94, Bull. Soc. ent. France 1900; *M. mathieui*, Oran, PIC, p. 124, Bull. Soc. ent. France 1900 : n. spp.

- Melyris insularis*, Sokotra, GAHAN, p. 8, Bull. Liverp. Mus. iii, n. sp.
- Metacantharis araxicola* var. n. *disparipennis*, BOURGEOIS, p. 153, Bode-meyer (131).
- M. taurigrada* Asia Minor, id. p. 154, t. c. n. sp.
- Metriorrhynchus insignipennis*, Tasmania, p. 52, *cliens*, *flagellatus*, p. 53, *miles*, *mentitor*, p. 54, *paradoxa*, *cremata*, p. 55, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.
- Myrmecophasma nietneri*, gen. et sp., described, ABEILLE, pp. 178, 179, Rev. Ent. franc. xix.
- Ototreta* n. g. near *Luciola*, for *O. weyerni*, p. 237, *fornicata*, p. 238, n. spp. Sumatra, OLIVIER, Ann. Soc. ent. Belgique xliv; *O. gravida*, Borneo, OLIVIER, p. 285, Bull. Soc. ent. France 1900, n. sp.
- Pagurodactylus* n. g., p. 78, *Malachiides*, for *P. viticeps* n. sp., Natal, p. 79, GORHAM, Ann. Nat. Hist. v.
- Philhedonus* n. g., near *Hedylbus*, for *P. coronatus* n. sp., Mashonaland, GORHAM, p. 82, t. c.
- Phosphaenopterus montandoni*, Wallachia, BOURGEOIS, p. 337, Bull. Soc. ent. France 1900, n. sp.
- Photinus ineptus*, Venezuela, OLIVIER, p. 64, Ann. Soc. ent. France lxix, n. sp.
- Plateros alternatus*, Colombia, BOURGEOIS, p. 663, Ann. Soc. ent. France lxviii, n. sp.
- Podabrus angustus*, China, FAIRMAIRE, p. 624, Ann. Soc. ent. France lxviii, n. sp.
- Podistriana peyerimhoffi*, Alpes maritimes, BOURGEOIS, p. 379, Bull. Soc. ent. France 1900; *P. algirica*, Algeria, BOURGEOIS, p. 284, t. c.; *P. normandi*, Tunis, PIC, p. 77, Echange xvi : n. spp.
- Ponyalis* n. g. near *Lyponia*, for *P. laticornis*, n. sp. China, FAIRMAIRE, p. 623, Ann. Soc. ent. France lxviii.
- Prostaptus* n. g., near *Malthodes*, p. 85, for *P. claudus*, n. sp., Mashonaland, p. 86, GORHAM, Ann. Nat. Hist. v.
- Pseudocolotes* n. g. near *Colotes*, p. 166, for the following new spp. from S. Africa, *cribripennis*, *plagiatus*, p. 167, *buccator*, *agnatus*, p. 168, ABEILLE, Rev. Ent. franc. xix.
- Psilothrix latipennis*, Rhodes, PIC, p. 77, Echange xvi, n. sp.
- Rhagonycha nigrocapitata*, *lyncea*, Asia Minor, BOURGEOIS, p. 155, Bode-meyer (131) n. spp.
- Rhagophthalmus gibbosulus*, China, FAIRMAIRE, p. 624, Ann. Soc. ent. France lxviii, n. sp.
- Selenurus fernshawensis*, Victoria, BLACKBURN, p. 115, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Telephorus pulchellus* var. ? *notophilus*, BLACKBURN, p. 116, t. c.
- T. confusus*, *hypopeltius*, p. 625, *hexiranthus*, *fraternus*, p. 626, *bigibbulus*, *monochrous*, p. 627, *foveicollis*, *limborarius*, p. 628, *sanguinosus*, p. 629, China, FAIRMAIRE, Ann. Soc. ent. France lxviii, n. spp.
- Trichalus cyanescens*, p. 422, *languidus*, New Guinea, *blanchardi*, Aru, p. 423, *imitator*, p. 424, *incrassatus*, p. 425, *sordescens*, p. 426, *abel-latus*, New Guinea, *ternatensis*, Ternate, p. 427, *albertisi*, p. 428, *cerberus*, p. 429, New Guinea, *perplexus*, Ternate, p. 430, BOURGEOIS, Ann. Mus. Genova xl; *T. funereus*, Victoria, BLACKBURN, p. 51, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Trichocarble ramicornis*, Turkestan, SCHILSKY, Kaf. Eur. xxxvii 4, n. sp.
- Xylobanus semiflabellatus* var. n. *xanthapis*, BOURGEOIS, p. 146, Ann. Soc. ent. Belgique xliv.
- X. fuscatus*, Congo, id. l. c., n. sp.
- Zelotypus* n. g. for *Collops violaceipennis* Motsch., ABEILLE, p. 180, Rev. Ent. franc. xix.
- Zygia lineata* var. n. *atriceps*, PIC, p. 9, Mt. Mus. Hamburk xvii

CLERIDÆ.

- [Cf. BLACKBURN (124), GORHAM (512), KRAATZ (766, 770), LOHDE (825), PIC (1036), SCHENKLING (1152, 1153).]
 Catalogue of *Cleridae*, upwards of 1800 species, LOHDE (825).
 Revision of Australian, with tabulation of genera and correction of many generic names, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, pp. 116–140.
Aulicus cræsus, p. 127, *dives*, p. 128, *nigrohirtus*, p. 129, *robustus*, *mundus*, p. 131, *eremita*, *amabilis*, p. 133, *cibratus*, p. 134, *modestus*, p. 135, Australia, BLACKBURN, t. c. n. spp.
Axina parcepunctata, p. 388, *basalis*, p. 389, *conspicua*, *plagiata*, p. 390, *munda*, p. 391, Goyaz, SCHENKLING, Deutsche ent. Zeitschr. 1900, n. spp.
Callimerus horni, Ceylon, KRAATZ, p. 189, t. c. n. sp.
Clerus latesellatus, Mexico, SCHENKLING, p. 18, Mt. Mus. Hamburg xvii; *C. sub junctus*, *fasciollis*, p. 393, *fasciatus*, p. 394, *rufimanus*, *faustus*, p. 395, S. America, SCHENKLING, Deutsche ent. Zeitschr. 1900 : n. spp.
Corynetes concolor, Natal, GORHAM, p. 75, Ann. Nat. Hist. v, n. sp.
Cymatodera guatemalensis, Guatemala, SCHENKLING, p. 385, Deutsche ent. Zeitschr. 1900, n. sp.
Dolichopsis auronitens, Natal, GORHAM, Ann. Nat. Hist. v, n. sp.
Dyslophocera n. g. near *Trogodendron*, p. 19, for *D. mirabilis*, n. sp. Rockhampton, p. 20, SCHENKLING, Mt. Mus. Hamburg xvii.
Emmepus pallidipennis, Algeria, PIC (1036) and Frelon viii, p. 1 sep. pag., n. sp.
Epiclides eburneoocincta var. n. *nigripes*, SCHENKLING, Deutsche ent. Zeitschr. 1900, p. 397.
E. similis, Chili, SCHENKLING, p. 397, t. c. n. sp.
Epiphlocus simplex, Bolivia, p. 397, *parvulus*, Goyaz, p. 398, SCHENKLING, t. c. n. spp.
Gyponyx, characters, SCHENKLING, p. 14, Mt. Mus. Hamburg xvii.
G. tricolor, p. 15, *pallidus*, p. 17, S. Africa, SCHENKLING, t. c. n. spp.
Ichnea præsta var. n. *femoralis*, SCHENKLING, p. 401, Deutsche ent. Zeitschr. 1900.
I. procera, Peru, p. 399, *I. (Pseudichnea) eliminata*, Goyaz, p. 400, SCHENKLING, t. c. n. spp.
Isolemidia bipunctata, Goyaz, SCHENKLING, p. 399, t. c. n. sp.
Natalis debilis, S. Australia, BLACKBURN, p. 120, Tr. R. Soc. S. Austral. xxiv, n. sp.
Neoscrubiger n. g. p. 136, type *Opilo patricius* Klug, with *N. rauiceps* n. sp., Victoria, p. 137, BLACKBURN, t. c.
Necrobia foveicollis, Brazil, SCHENKLING, p. 20, Mt. Mus. Hamburg xvii, n. sp.
Opilo nigerrimus, Ikutha, KRAATZ, p. 296, Deutsche ent. Zeitschr. 1900, n. sp.
Orthrus carinifrons, Japan, SCHENKLING, p. 17, Mt. Mus. Hamburg xvii, n. sp.
Pelonium ramosum, Bahia, p. 402, *subapicale*, Amazons, p. 403, *ruficeps*, *jucundum*, p. 404, *placidum*, p. 405, Goyaz, *P. ? tuberculipenne*, Chili, p. 406, *P. tarsale*, Goyaz, p. 407, *meieri*, S. America ?, *kraatzi*, Goyaz, p. 408, *geminum*, Peru, p. 409, SCHENKLING, Deutsche ent. Zeitschr. 1900, n. spp.
Phæocopus undulatus, S. Africa, GORHAM, p. 72, Ann. Nat. Hist. v, n. sp.
Platynoptera pectoralis, Goyaz, SCHENKLING, p. 401, Deutsche ent. Zeitschr. 1900, n. sp.

- Priocera unifasciata*, Brazil, SCHENKLING, p. 14, Mt. Mus. Hamburg xvii ;
P. podagraria, p. 385, *quadrinotata*, p. 386, *angulata*, p. 387, Goyaz,
 SCHENKLING, Deutsche ent. Zeitschr. 1900 : n. spp.
Stigmatum ceylonicum, Ceylon, KRAATZ, p. 190, t. c. n. sp.
Tarsostenodes n. g. for *T. simulator* n. sp. Victoria, p. 139, BLACKBURN, Tr.
 R. Soc. S. Austral. xxiv.
Tenerus laterimaculatus, Ceylon, KRAATZ, p. 192, Deutsche ent. Zeitschr.
 1900, n. sp.
Thalerocnemis n. n. for *Chlorocnemis* Kuwert, LOHDE, p. 145, Ent. Zeit.
 Stettin lxi.
Thanasimus bifasciatus, ceylonicus Ceylon, KRAATZ, p. 191, Deutsche ent.
 Zeitschr. 1900, n. spp.
Tillus compressicornis Kl. referred to *Philocalus*, GORHAM, p. 71, Ann.
 Nat. Hist. v.
T. palestinus, Jericho, PIC, Frelon viii, p. 2, sep. pag.; *T. capensis*,
 S. Africa, SCHENKLING, p. 13, Mt. Mus. Hamburg xvii : n. spp.
Trichodes turkestanicus var. n. *apicalis*, p. 99, pl. iv, fig. 3a, BRANCSIK,
 Jahresh. Ver. Trencsen xxi.
T. tugelanus, Natal, GORHAM, p. 73, Ann. Nat. Hist. v, n. sp.

PTINIDÆ.

[Cf. ALLUAUD (22), GAHAN (478, 479), HOPKINS (599), PIC (1007, 1016,
 1018, 1019, 1020, 1024, 1031, 1032), SCHILSKY (1154).]

Stridulating organs of *Anobiidae*, GAHAN (478).
 Notes on Schilsky's Heft xxxvi of Küster, PIC, pp. 6, 7, MisCELL. ENT. viii.

- Canocara boleti*, Madagascar, ALLUAUD, p. 21, Bull. Soc. ent. France 1900,
 n. sp.
Ernobius oertzeni, Greece, SCHILSKY, Käf. Eur. xxxvii, 14, n. sp.
Mesocelopus subterriatus, Caucasus, SCHILSKY, op. cit. 15, n. sp.
Neoptinus n. g. p. 102, for *N. parvus* n. sp., Christmas Is., p. 103, pl. x,
 fig. 10, GAHAN, Monogr. Christmas Island.
Paranobium n. g. for *P. posticum* n. sp., Christmas Is., pl. x, fig. 9, GAHAN,
 p. 104, t. c.
Ptinus krugeri n. n. for *lepidus* Pér. nec Villa, PIC, p. 289, Bull. Soc. ent.
 France 1900; *P. martini* var. *rubi*, PIC, p. 55, Echange xvi.
P. (Pseudoptinus) subcarnatus, Algeria, PIC, p. 55, t. c.; *P. (Pseudoptinus)*
anatolicus, Anatolia, *P. circassicus*, Circassia, p. 48, *leuithneri*, Syria,
 p. 49, PIC, Bull. Soc. ent. France 1900; *P. (Gynopterus) californicus*,
 California, PIC, p. 89, Echange xvi; *P. unilineatus* Mexico, p. 252,
submetallicus Brazil, p. 253, *hirtithorax*, *gorhami*, Chili, p. 254, PIC,
 Ann. Soc. ent. Belgique xliv; *P. groulti*, *obscuripes*, Brazil, PIC, p. 211,
 Naturaliste xxii; *P. chilensis*, Valparaiso, PIC, p. 10, Mt. Mus.
 Hamburg xvii, Beih. ii : n. spp.
Thaptor variegatus, tessellatus, brevipennis, Brazil, PIC, p. 68, Naturaliste
 xxii, n. spp.
Theca limnicoides, Madagascar, ALLUAUD, p. 20, Bull. Soc. ent. France
 1900; *T. (Sculptotheca) hillori*, Japan, SCHILSKY, Käf. Eur. xxxvii,
 16 : n. spp.
Trichodesma nigromaculata, Burma, *regalis*, E. India, *goyavensis*, Brasil,
 PIC, p. 57, Naturaliste xxii, n. spp.
Xyletinus suturatus, Madagascar, ALLUAUD, p. 20, Bull. Soc. ent. France
 1900, n. sp.

BOSTRICHIDÆ.

- Dinoderus substratus*, synonymy, DONISTHORPE, p. 16, Ent. Rec. xii.
Lyctus canaliculatus as an injurious insect, BUREAU (195).
Micrapate Casey = (*Bostrychulus* Lesne), LESNE, p. 46, Bull. Soc. ent. France 1900.
Patea Casey, is part of *Dinoderus*, LESNE, l. c.
Phonapate porrecta, Congo, LESNE, p. 426, Ann. Soc. ent. Belgique xlii, n. sp.
Stephanopachys n. g. for *Dinoderus substriatus* Payk., WATERHOUSE, Ann. Nat. Hist. 1888, p. 348. [Omitted from Zoological Record previously; cf. DONISTHORPE, Ent. Rec. xii, p. 17.]
Xylopertha piecea Ol. = (*heydeni* Schilsky), LESNE, p. 47, Bull. Soc. ent. France 1900; *X. pustulata, chevrieri*, synonymy, LESNE, p. 11, t. c.
X. transvena, Congo, LESNE, p. 426, Ann. Soc. ent. Belgique xlii, n. sp.

CIOIDÆ.

[Cf. CASEY (229), PERKINS (990), SCHILSKY (1154).]

- Apterocis* n. g. p. 265, with *A. lanaiensis*, Lanai, pl. x, fig. 14, *montanus*, Maui, p. 266, *variabilis*, Oahu, *hawaiiensis*, p. 267, *rufo-notatus*, Hawaii, *impunctatus*, Oahu, *variegatus*, Maui, p. 268, *ornatipennis*, Lanai, fig. 15, *strigosus*, Molokai, p. 269, *subaeus*, Maui, *hystrix*, Lanai, p. 270, PERKINS, Fauna Hawaiiensis ii, n. spp.
Cis nigrorugosus, Amur, xxxvii, 66, *grecus*, Morea, 68, *sibiricus*, Amur, 75, SCHILSKY, Käf. Eur., n. spp.
Cis breviformis, Molokai, p. 255, *nesiotes, cognatissimus*, Kauai etc., p. 256, *unicus*, Hawaii, p. 258, *simulator*, Maui, p. 259, *kauaiensis*, Kauai, p. 261, *molokaiensis*, Molokai, *haleakalæ*, Maui, pl. x, fig. 17, *mirabilis*, Kauai, p. 262, *fallax*, Oahu, *mimus*, Maui, p. 263, *angustiformis*, Oahu, p. 265, PERKINS, Fauna Hawaiiensis ii, n. spp.
Maphexa n. g. near *Plesiocis*, p. 165, for *M. blaisdelli* n. sp., California, p. 166, CASEY, J. N. York Ent. Soc. viii.

TENEBRIONIDÆ and RHYSOPAUSSIDÆ.

- [Cf. ALLUAUD (26), ARROW (36), CHOBAUT (244, 246), BLACKBURN (123, 124), BORDAS (144), BRANCSIK (167), FAIRMAIRE (389 to 393), FLEISCHER (427), GAHAN (478, 983), GESTRO (492), REITTER (131, 1092, 1094, 1097, 1098, 1099, 1101), VAULOGER (1352), XAMBEU (1420).]
List of *Rhysopaussidæ*, GESTRO, Ann. Mus. Genova xl, pp. 746–748.

- Adelostoma granti*, Sokotra, GAHAN, p. 10, Bull. Liverp. Mus. iii, n. sp.
Agreucus n. g. near *Amarenes*, p. 21, for *A. chalcoides* n. sp., Madagascar, p. 22, FAIRMAIRE, Bull. Soc. ent. France 1900.
Amarygmus funebris, Christmas Is., ARROW, p. 107, Monogr. Christmas Island, n. sp.
Amiantus sexcostatus, Somaliland, GAHAN, p. 28, P. Zool. Soc. London 1900, n. sp.
Ammozoum, the species, REITTER, p. 300, Ent. Nachr. xxvi.
Anemia sakalava, Madagascar, ALLUAUD, p. 18, Bull. Mus. Paris 1900, n. sp.
Arthrodinus n. g. for an undetermined sp. from Teneriffe, REITTER, p. 299, Ent. Nachr. xxvi.
Arthrodosis n. g. for part of *Arthrodeis*, REITTER, p. 299, Ent. Nachr. xxvi.

- Aridesthes* n. g. near *Scotinesthes*, p. 246, for *A. perrieri* n. sp., Madagascar, p. 247, FAIRMAIRE, Ann. Soc. ent. Belgique xliv.
- Bariacus* n. g. near *Azarelius*, for *B. costulatus* n. sp., Borneo, FAIRMAIRE, p. 45, Bull. Soc. ent. France 1900.
- Blaps medusa*, Centr. Asia, REITTER, p. 161, pl. i, fig. 6, Wien. ent. Zeit. xix, n. sp.
- Bradymerus seminitidus*, Christmas Is., ARROW, p. 106, Monogr. Christmas Island, n. sp.
- Camaria microdera*, China, FAIRMAIRE, p. 630, Ann. Soc. ent. France lviii, n. sp.
- Chalcopterus kochi*, S. Australia, BLACKBURN, p. 59, Tr. R. Soc. S. Austral. xiv, n. sp.
- Crypticus quisquilius* var. n. *opacus*, BRANCSIK, p. 100, Jahresh. Ver. Trensen. xxi.
- Dendarus transcapius*, Ashabed, BRANCSIK, p. 101, t. c. n. sp.
- Dereus* n. g. *Helopine* near *Euberus*, for *D. denticollis*, n. sp. Sokotra, GAHAN, p. 10, Bull. Liverp. Mus. iii.
- Diaphanidius* n. g. near *Erodius*, p. 299, for *Arthrodeis antennatus* Reitt. and *D. semenowi* n. sp., Turkestan, p. 302, REITTER, Ent. Nachr. xxvi.
- Dichillus explanatus*, *pusillus*, Buchara, REITTER, p. 54, Deutsche ent. Zeitschr. 1900, n. spp.
- Dila persiana*, Persia, *16-striata*, Turkestan, p. 295, *bucharica*, Buchara, p. 296, REITTER, Ent. Nachr. xxvi, n. spp.
- Erodinus* n. g. for an undetermined species from Teneriffe, REITTER, p. 299, t. c.
- Euglyptonotus* n. g. *Rhysopterus* for *E. magrettii* n. sp., Erythrea, GESTRO, p. 744, Ann. Mus. Genova xl.
- Eusynetria opacicollis*, Sokotra, GAHAN, p. 9, Bull. Liverp. Mus. iii, n. sp.
- Gonodera rufocincta*, Asia Minor, REITTER, p. 159, Bodemeyer (131), n. sp.
- Helopini*, monograph of N. African, VAULOGER, Ann. Soc. ent. France lviii, pp. 669-722.
- Helops*; cf. also *Pelorus*; *H. nitidicollis* var. n. *thalassinus*, *nigricans*, p. 688, *obtusatus* var. n. *deserticola*, p. 688, *batnensis* var. n. *sorcinus*, *biskrensis*, p. 692, *echinatus* n. n. for *hirtus* Seidl. nec Mula, p. 692, VAULOGER, t. c.
- H. diabolinus*, Ashabed, BRANCSIK, p. 101, pl. iv, fig. 5, Jahresh. Ver. Trensen. xxi; *H. (Stenomax) verrucosus*, *martini*, p. 683, *litigiosus*, p. 684, *H. (Diastixus) pulvinatus*, p. 687, *piger*, p. 688, *H. (Gunerus) rufulus*, p. 689, *H. (Catomidius) ciliatus*, *comatus*, *anthicoides*, p. 690, *submetallicus*, *capillatus*, p. 693, *H. (Catomes) amabilis* ricardi, p. 696, VAULOGER, t. c.; *H. bodemeyeri*, p. 156, *H. (Odoconemis) protinus*, *lordisculus*, p. 157, *H. (Cylindrinotus) funestoides*, p. 158, Asia Minor, REITTER, Bodemeyer (131) : n. spp.
- Histeromorphus undatus*, Sokotra, GAHAN, p. 8, Bull. Liverp. Mus. iii, n. sp.
- Hypocilibe veterosa*, S. Australia, BLACKBURN, p. 140, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Laena pici*, Syria, REITTER, p. 87, Deutsche ent. Zeitschr. 1900, n. sp.
- Melanimon sabulorum*, Tunis, CHOBAUT, p. 31, Bull. Soc. ent. France 1900, n. sp.
- Misolampus goudoti*, Algeria, VAULOGER, p. 674, Ann. Soc. ent. France lviii, n. sp.
- Nyctelias longiplicata*, Patagonia, FAIRMAIRE, p. 111, Ann. Soc. ent. Belgique xliv, n. sp.
- Nyctobates macrocephalus*, China, FAIRMAIRE, p. 629, Ann. Soc. ent. France 1900; *N. carbonaria*, Christmas Is., ARROW, p. 106, Monogr. Christmas Island : n. spp.
- Opatrum dubium*, Christmas Is., ARROW, -

- Palorus orientalis*, Transcaucasus, *subfilum*, Biskra, FLEISCHER, p. 237, Wien. ent. Zeit. xix, n. spp.
- Parecatus* n. g. for *Scotinesthes costulatus*, and *P. plicatulus* n. sp., Madagascar, FAIRMAIRE, p. 245, Ann. Soc. ent. Belgique xliv.
- Pelorinus* subg. n. of *Helops*, VAULOGER, p. 680, Ann. Soc. ent. France lxviii; *H. (P.) linearis* n. n. for *cribrifrons* All. nec Lucas, *H. (P.) villosipennis* var. *n. normandi*, p. 681, *anthracinus* var. *tardus* n. n. = (*obesus* Luc.), p. 681, id. t. c.
- Phaleria bedeli*, Algeria, CHOBAUT, p. 340, Bull. Soc. ent. France 1900, n. sp.
- Platyscelis (Oodescelis) sahlbergi*, Turkestan, REITTER, Wien. ent. Zeit. xix, n. sp.
- Praogenia nigra*, Somaliland, GAHAN, p. 30, P. Zool. Soc. London 1900, n. sp.
- Prosodes rugicostata*, *vincens*, *suturangula*, Centr. Asia, REITTER, p. 55, Deutsche ent. Zeitschr. 1900, n. spp.
- Rhophobas asperatus* Motsch.=*Nyctobates granifera* Fairm., KOLBE, p. 74, Ent. Nachr. xxvi.
- Rhytidonota exigua*, p. 8, *socia*, *R. ? tibialis*, p. 9, Sokotra, GAHAN, Bull. Liverp. Mus. iii; *R. robusta*, Somaliland, GAHAN, p. 28, pl. i, fig. 13, P. Zool. Soc. London 1900, n. sp.
- Scotinesthes asperulus*, Madagascar, FAIRMAIRE, p. 245, Ann. Soc. ent. Belgique xliv, n. sp.
- Sepidium magnum*, pl. i, fig. 12, p. 29, *bilobatum*, fig. 14, p. 30, Somaliland, GAHAN, P. Zool. Soc. London 1900, n. spp.
- Setenis* Knoch= *(Pseudolobates* Fairm.), *S. coracina* Knoch= *(Iphthimus* *cupripennis* Boh.), *S. fairmairei* n. n. for *coracina* Fairm., KOLBE, p. 74, Ent. Nachr. xxvi.
- Sphenaria reitteri*, Ashabad, BRANCSIK, p. 99, Jahresh. Ver. Trencsen. xxi, n. sp.
- Strongylium forcipicolle*, Borneo, FAIRMAIRE, p. 45, Bull. Soc. ent. France 1900, n. sp.
- Tagona longicollis*, Ashabad, BRANCSIK, p. 100, pl. iv, fig. 4, Jahresh. Ver. Trencsen. xxi, n. sp.
- Toxicum antilope*, Christmas Is., ARROW, p. 106, Monogr. Christmas Island, n. sp.
- Trachyscelis anisotomoides* Fairm. is a *Liodes*, BEDEL, p. 248, Bull. Soc. ent. France 1900.
- Trigonocnemis holdereri*, Centr. Asia, REITTER, p. 161, Wien. ent. Zeit. xix, n. sp.
- Zophosis undulata*, Sokotra, GAHAN, p. 8, Bull. Liverp. Mus. iii, n. sp.

CISTELIDÆ.

- Bratyna apicalis* ♀, KRAATZ, p. 10, Deutsche ent. Zeitschr. 1900.
- Cistela kauaiensis*, pl. x, fig. 22, *nigricollis*, Kauai, p. 248, *subaenescens* *apicalis*, Oahu, *montana*, Kauai, p. 249, *konæ*, Hawaii, p. 250, PERKINS, Fauna Hawaiianis ii, n. spp.
- Cistelomorpha nigrosparsa*, Yunnan, p. 630, *bina*, Formosa, *atripes*, p. 631, *infranigra*, p. 632, China, FAIRMAIRE, Ann. Soc. ent. France lxviii, n. spp.
- Cteniopus luteus* var. *n. obscurithorax*, PIC, p. 189, Act. Soc. Espan. 1900.
- Labetus hawaiiensis*, Hawaii, p. 250, *comitans*, Kauai, pl. x, fig. 21, p. 251, PERKINS, Fauna Hawaiianis ii, n. spp.

MELANDRYIDÆ.

[Cf. CASEY (229), FAIRMAIRE (390), SEMENOW (1196).]

Abstrulia n. g. *Tetratomini*, p. 168, for *tessellata* Melsh. and *variegata*, *maculata* n. spp., N. America, p. 169, CASEY, J. N. York Ent. Soc. viii.

Eupisenus n. g. *Tetratomini* for *Triphyllus elongatus* Lec., CASEY, p. 170, t. c. *Incolia* n. g. *Tetratomini*, p. 169, for *I. longipennis* n. sp., N. America, p. 170, CASEY, t. c.

Mystaxus relictus, Buchara, SEMENOW, p. 685, Horæ Soc. ent. Ross. xxiv, n. sp.

Pisenus n. g. *Tetratomini*, p. 171, for *humeralis* Kirby = (*Triphyllus ruficornis* Lec.), and *P. pubescens* n. sp., Virginia, p. 172, CASEY, J. N. York Ent. Soc. viii.

Tolmerus n. g. near *Melandrya*, p. 111, for *T. longipennis* n. sp., Patagonia, p. 112, FAIRMAIRE, Ann. Soc. ent. Belgique xliv.

LAGRIIDÆ.

Chlorophila carolina, p. 632, *semenowi*, p. 633, China, FAIRMAIRE, Ann. Soc. ent. France lxviii, n. spp.

Entyopodera impressithorax, E. Africa, PIC, p. 34, Echange xvi, n. sp.

Nemostira rugulicollis, China, FAIRMAIRE, p. 633, Ann. Soc. ent. France 1900, n. sp.

ANTHICIDÆ, PEDILIDÆ.

[Cf. PIC (1000–1005, 1014, 1017, 1021, 1022, 1024, 1026, 1031, 1035), SCHILSKY (1154), SEMENOW (1194–1196).]

Anthicus amicitia and other species described by Dufour, synonymy, PIC, pp. 102, 103, Bull. Mus. Paris 1900; *A. floralis* var. n. *massauensis*, PIC, p. 574, Ann. Mus. Genova xl; *A. reitteri* var. n. *reductus*, BRANCSIK, p. 102, pl. iv, fig. 6, Jahresh. Ver. Trencsen. xxi; *A. betni-bokensis* n. n. for *quadraticeps* Fairm. nec Desb., PIC, p. 289, Bull. Soc. ent. France 1900; *A. insignis* var. n. *tripolitanus*, PIC, p. 165, t. c.

A. ferianensis, Tunis, PIC, p. 56, Echange xvi; *A. densifer*, *anticmaculatus*, *subruficifer*, Turkestan, *A. (Aulacoderus) peyroni*, Syria, PIC, p. 78, t. c.; *A. haasi*, p. 89, *arcuaticeps*, p. 90, Turkestan, PIC, t. c.; *A. opaciceps*, *tschofeni*, Congo, PIC, p. 429, Ann. Soc. ent. Belgique xliv; *A. schmitti*, *morogorensis*, E. Africa, PIC, p. 36, Echange xvi; *A. bellii*, Erythraea, PIC, p. 574, Ann. Mus. Genova xl; *A. (Pseudoleptalcus) gibbipennis*, *A. papuus*, p. 603, *quadrinotatus*, *hirtipennis*, *submetallicus*, p. 604, *adonis*, *albertisi*, p. 605, *loric*, *rugosicollis*, p. 606, *neoguineensis*, *dilensis*, *insulanus*, p. 607, *alfurus*, *dilatipennis*, p. 608, New Guinea, PIC, t. c.; *A. difformipes*, *brunneonotatus*, *diversiceps*, *diversipes*, Sumatra, PIC, p. 759, Ann. Soc. ent. France lxviii; *A. (Pseudoleptalcus) bidentatus*, *collaris*, p. 797, *monstrosicollis*, Sumatra, *macassarensis*, *dilutus*, Celebes, p. 798, *A. sinuatipes*, Mentawai, *puncticeps*, Celebes, p. 799, *insolitus*, Bali, *puncticollis*, *modiglianii*, *balighensis*, Sumatra, p. 800, *nigricolor*, Mentawai, p. 801, PIC, Ann. Mus. Genova xl; *A. inflatithorax*, p. 138, *A. (Ischyropalpus) venezuelensis*, Venezuela, *A. (Aulacoderus) ganglbaueri*, E. Africa, p. 139, PIC, Verh. Ges. Wien 1 : n. spp.

Curtotomoderus subg. n., see *Tomoderus*.

Formicomus waelbroecki, Congo, PIC, p. 422

- F. schmitti*, *ganglbaueri*, E. Africa, PIC, p. 35, Echange xvi; *F. fieberi*, Tenasserim, PIC, p. 138, Verh. Ges. Wien l; *F. modiglianii*, *gibbithorax*, Mentawai, p. 794, *tibialis*, Java, *beccarii*, Celebes, *robustipes*, Mentawai, p. 795, *sumatrensis*, *siboganus*, p. 796, *atricolor*, Sumatra, p. 797, PIC, Ann. Mus. Genova xl : n. spp.
- Hylophilus atriceps* n. n. for *X. nigricollis* Champ., PIC, p. 231, Bull. Soc. ent. France 1900.
- H. macassarensis*, *beccarii*, Celebes, *latipennis*, p. 738, *modiglianii*, p. 739, *carinatus*, *gestroi*, *pallidicolor*, *diversipes*, *tibialis*, p. 740, Sumatra, PIC, Ann. Mus. Genova xl ; *H. theresa*, *longithorax*, p. 755, *nigrofasciatus*, *grandiceps*, *nigromaculatus*, *subsericeus*, p. 756, *donckieri*, *curtithorax*, p. 757, Sumatra, PIC, Ann. Soc. ent. France lxviii ; *H. peruvianus*, p. 19, *staudingeri*, p. 20, Peru, PIC, Echange xvi, ? n. spp. : n. spp.
- Macratria helperi* var. n. *bimaculata*, PIC, p. 138, Verh. Ges. Wien l.
- M. severini*, Congo, PIC, p. 430, Ann. Soc. ent. Belgique xliv ; *M. donckieri*, *limbata*, *rubrofasciata*, Sumatra, PIC, p. 760, Ann. Soc. ent. France lxviii ; *M. testaceicornis*, Celebes, p. 791, *doriae*, *hirsuta*, Borneo, p. 792, PIC, Ann. Mus. Genova xl ; *M. beccarii*, p. 597, *loriae*, *coniceps*, *gestroi*, with var. *densata*, p. 598, *opacicollis*, *maculipennis*, p. 599, *albertisi*, *distincticornis*, *rubriceps*, p. 600, with var. *neoguineensis*, p. 601, New Guinea, PIC, t. c. : n. spp.
- Macrotomoderus* n. g. near *Cotes*, for *M. latipennis* n. sp., Sumatra, PIC, p. 741, t. c.
- Mecynotarsus ahngeri*, Transcaspian, SEMENOW, p. 598, Horae Soc. ent. Ross. xxxiv ; *M. sumatrensis*, Sumatra, PIC, p. 758, Ann. Soc. ent. France lxviii ; *M. loriae*, New Guinea, PIC, p. 602, Ann. Mus. Genova xl : n. spp.
- Notoxus*, table of palaeartic, PIC (1035); *N. miles* var. n. *ruberithorax*, PIC, p. 161, BODEMEYER (131); *N. sectator* var. *obscuripennis*, PIC, p. 428, Ann. Soc. ent. Belgique xliv ; *N. numidicus* var. *mauritii*, *N. mauritanicus* var. *lethierryi*, PIC, p. 32, Echange xvi.
- Pedilus tibialis* var. n. *pallidipes*, PIC, p. 10, Mt. Mus. Hamburg xvii, Beih. ii.
- P. zubowskii*, Buchara, SEMENOW, p. 319, Horae Soc. ent. Ross. xxxiv ; *P. willbergi*, *polyxanthus*, Buchara, SEMENOW, p. 687, t. c. : n. spp.
- Pristocyphus maculipennis*, E. Africa, PIC, p. 34, Echange xvi, n. sp.
- Scraptia aertzeni*, Crete, SCHILSKY, Käf. Eur. xxxvii, 28, n. sp.
- Tomoderus tschoffeni*, Congo, PIC, p. 428, Ann. Soc. ent. Belgique xliv ; *T. rubrofasciatus*, E. Africa, PIC, p. 35, Echange xvi ; *T. (Curtotomoderus subg. n.) brevipennis*, Sumatra, PIC, p. 89, t. c. ; *T. (Sirambeus) depressipennis*, p. 801, *T. pallidus*, *modiglianii*, p. 802, *subcostulatus*, *gestroi*, p. 803, Sumatra, PIC, Ann. Mus. Genova xl ; *T. plicicollis*, New Guinea, PIC, p. 603, t. c. : n. spp.

RHIPIPHORIDÆ and MORDELLIDÆ.

- Evaniocera persimilis*, Victoria, BLACKBURN, p. 60, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Mordellistena oranensis*, Algeria, PIC, p. 124, Bull. Soc. ent. France 1900, n. sp.

CANTHARIDÆ and CEPHALOIDÆ.

[Cf. GANGLBAUER (131), REITTER (1099), SEMENOW (1199), THOMAS (983), XAMBEU (1420).]

Cephaloidæ a valid family near *Edemerida*, SEMENOW, p. 496, Horae Soc. ent. Ross. xxxiv.

- Ctenoprus sogdianus*, Turkestan, p. 486, *cous*, Chinese Turkestan, p. 487, SEMENOW, t. c. n. spp.
Ephamillus subg. n. for *Cephaloon variable* Motsch., SEMENOW, p. 495, t. c.
Glasunovia, p. 488, and *G. caspica*, p. 489, characters, SEMENOW, t. c. n. spp.
Hapalus kraatzianus n. n. for *apicalis* Kr., p. 490; *H. grandiceps*, p. 492, *fasciatus* Fald., p. 493, characters, SEMENOW, t. c.
Hapalus sokolovi, Samarcand, SEMENOW, p. 491, t. c. n. sp.
Leonidia n. n. for *Leonia* preoccupied, COCKERELL, p. 11, Psyche ix.
Lydus reitterianus=(*Halosimus armeniacus* Reitt. nec. Fald.), SEMENOW, p. 481, Horæ Soc. ent. Ross. xxxiv, n. sp.
Meloe proscarabæus, ♂ ♀ antennæ, structure and use, SCHOLZ, p. 217, Illustr. Zeitschr. Ent. v.
M. bodemeyeri, Asia Minor, GANGLBÄUER, p. 160, BODEMEYER (131); *M. nigropilosellus*, Buchara, REITTER, p. 56, Deutsche ent. Zeitschr. 1900 : n. spp.
Mylabris somalica, Somaliland, THOMAS, p. 31, P. Zool. Soc. London 1900, n. sp.

ŒDEMERIDÆ.

[Cf. ARROW (36), GANGLBÄUER (131), SEMENOW (1198).]

- Enas coccinea* var. n. *fuscicrus*, BRANCSIK, p. 102, Jahresh. Ver. Trencsen. xxii.
Zonitis turkestanica, Samarcand, p. 480, *kozlowi*, Chinese Turkestan, p. 482, SEMENOW, Horæ Soc. ent. Ross. xxxiv, n. spp.
 SEMENOW discusses various genera in connection with the recent work of Seidlitz, t. c. pp. 643–655.
 Omissions from Seidlitz' work, PIC, p. 112, Echange xvi.
Anisochora n.g., p. 652, near *Nacerdochroa*, for *A. zarudnyi* n. sp., Persia, p. 653, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
Asclera bodemeyeri, Asia Minor, GANGLBÄUER, p. 161, Bodemeyer (131), n. sp.
Asclerella n. g., p. 648, near *Zubkovia*, for *A. tenera* n. sp., Persia, p. 651, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
Chrysanthia superba, *reitteri*, *oranensis*, synonymy, REITTER, p. 13, Wien. ent. Zeit. xix; *C. superba*, synonymy, PIC, p. 91, Feuille Natural. xxx.
Eobia and *Copidita* distinguished, SEMENOW, Horæ Soc. ent. Ross. xxxiv, p. 644.
Sessinia andrewsi, p. 107, *listeri*, p. 108, Christmas Is., ARROW, Monogr. Christmas Island, n. spp.
Sparedrides; validity of the tribe, SEMENOW, Horæ Soc. ent. Ross. xxxiv.
Xanthomima n. g. for *Ananconia handlirschi* Seidl., SEMENOW, p. 646, t. c.

CURCULIONIDÆ.

- [Cf. ALLUAUD (22), BEDEL (88), BLACKBURN (123, 125), BORDAS (144), BRANCSIK (167), DESBROCHERS (314–316), FABRE (385), FAIRMAIRE (389), FAUST (574), GAHAN (478, 479), GERMAIN (491), HARTMANN (564, 565, 566), HELLER (573), KINCAID (711), KOLBE (752), KRAUSS (781), LEA (802, 803), NEEDHAM (936), PERKINS (990), PIC (1008, 1011, 1026, 1028, 1031, 1036), REITTER (1092, 1099, 1100, 1101), SCHULTZE (1167), STIERLIN (1284), XAMBEU (1420).]

Revision of Australian *Cryptorhynchidae*, pt. iv, genera allied to *Psepholax*, LEA (802).

- Stridulating organs, GAHAN (478).
- Instinct and oviposition of numerous forms, *Larinides*, *Balaninides*, *Rhynchitides*, FABRE (385).
- Metamorphosis of *Mononychus*, NEEDHAM (936).
- Acalles syriacus*, Lebanon, PIC, p. 79, Echange xvi; *A. humeralis*, Maui, *callichroma*, pl. vii, fig. 10, *melanolepis*, fig. 11, Hawaii, p. 132, *frater*, Maui, *koe*, Hawaii, p. 133, *innotabilis leptothorax*, fig. 12, Kauai, p. 134, *lanaiensis*, *nigripennis*, fig. 15, Lanai, *chlorolepis*, Kauai, p. 136, *tuberculatus*, Hawaii, *pallidicollis*, Kauai, p. 137, *monticola*, *oahuensis*, Oahu, p. 138, PERKINS, Fauna Hawaiianensis ii : n. spp.
- Acionemis andrewsi*, Christmas Is., GAHAN, p. 112, Monogr. Christmas Island; *A. figurata*, Bongu, HARTMANN, p. 281, Deutsche ent. Zeitschr. 1900 : n. spp.
- Acnemis celis araneipes*, note on, MEIER, p. 219, Ent. Nachr. xxvi.
- Alaoxyba theresa*, Tunis, PIC, p. 90, Echange xvi, n. sp.
- Alcides lobipennis*, China, FAIRMAIRE, p. 634, Ann. Soc. ent. France 1900; *A. ferrugineus*, p. 274, *bonguensis*, *frater*, p. 276, Bongu, HARTMANN, Deutsche ent. Zeitschr. 1900; *A. terrereginae*, Queensland, BLACKBURN, p. 141, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Anchithyrus ornatus*, p. 40, *nebulosus*, *laticollis*, pl. fig. 19, p. 41, Celebes, HELLER, Abh. Mus. Dresden ix, No. 5, n. spp.
- Anotheorus robustus*, Kauai, pl. viii, fig. 27, PERKINS, p. 173, Fauna Hawaiianensis ii, n. sp.
- Atactoglymma* n. g. *Celeuthidarum*, for *A. spinipes* n. sp. Celebes, HELLER, p. 22, Abh. Mus. Dresden ix, No. 5.
- Balaninus tenuesparsus*, China, FAIRMAIRE, p. 635, Ann. Soc. ent. France lxviii, n. sp.
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- Baris holdereri*, Centr. Asia, REITTER, p. 163, Wien. ent. Zeit. xix; *B. orchivora*, Queensland, BLACKBURN, p. 61, Tr. R. Soc. S. Austral. xxiv : n. spp.
- Barypitheca carpathicus* and *styriacus* distinguished, REITTER, p. 243, Wien. ent. Zeit. xix.
- Barystethus wahnesi*, New Guinea, HARTMANN, p. 294, Deutsche ent. Zeitschr. 1900, n. sp.
- Bonthaina* n. g. *Celeuthidarum*, p. 20, for *B. fausti*, *solitaria* n. spp., Celebes, p. 21, HELLER, Abh. Mus. Dresden ix, No. 5.
- Brachyaspistes tibialis*, pl. iv, figg. 5, 6, habits, p. 52, Ind. Mus. Notes v.
- Brachyderes lusitanicus*, early stages, XAMBEU, p. 8, Naturaliste xxii.
- Camptorhinus crinipes*, Christmas Is., GAHAN, p. 112, Monogr. Christmas Island, n. sp.
- Catastygnus limbifer*, Australia, FAUST, p. 626, Semon Forschungsreise v, n. sp.
- Cathormiocerus churchevillei*, France, DESBROCHERS, p. 44, Frelon viii; *C. alveolatus*, Tangier, DESBROCHERS, p. 15, t. c. : n. spp.
- Ceuthorrhynchus obsoletus* Germ.=*(dalmatinus* Stierl.), SCHULTZE, p. 48, Deutsche ent. Zeitschr. 1900.
- C. ruebsaameni*, Germany, KOLBE, p. 227, Ent. Nachr. xxvi; *C. poncyi*, Roumania, STIERLIN, p. 235, Mt. Schweiz ent. Ges. x; *C. (Nedyus?) dentatoserratus*, Alexander Mts., REITTER, p. 58, Deutsche ent. Zeitschr. 1900; *C. anatolicus*, p. 21, *brevirostris*, p. 22, Smyrna, *granulithorax*, Spain, Algeria, p. 23, *sericellus*, Syria, p. 25, *plani-dorsum*, p. 27, *curticornis*, p. 28, Algeria, *longipennis*, Tangasi, p. 30, *pinicillus*, Algeria, p. 31, *carinifrons*, p. 33, *forticornis*, p. 34, Syria, *striatellus*, Hungary, p. 36, *arduus*, Tangier, p. 37, *infernalis*, Syria,

- p. 38, *schusteri*, Vienna, p. 39, *damascenus*, Syria, p. 40, *melitensis*, Malta, p. 42, *longitarsis*, p. 43, *tataricus*, p. 44, Turkestan, *circassicus*, Circassia, p. 46, *tangerianus*, Tangier, p. 47, SCHULTZE, t. c. : n. spp. *Conocetus cylindrithorax*, Rhodes, DESBROCHERS, p. 14, Frelon viii, n. sp. *Coptorrhynchus*; Celebes spp. tabulated and discussed, HELLER, pp. 23–27, Abh. Mus. Dresden ix, No. 5.
- C. narinosus*, p. 27, *brevicollis*, *globinasus*, p. 28, *lacerta*, *celeutheticus*, p. 29, *subacutus*, *amplus*, p. 30, *manadensis*, *sulcirostris*, p. 31, *rossipes*, *cyclophthalma*, p. 32, *beryllinus*, *zygopanicus*, *sternalis*, p. 33, *longicollis*, *ihuuanus*, p. 34, *lacophilus*, *amabilis*, p. 35, *heteroclavatus*, p. 36, Celebes, id. t. c. n. spp.
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- Cossonus variipennis*, Christmas Is., GAHAN, p. 114, Monogr. Christmas Island, n. sp.
- Cryptoderma maximum* ♂, HELLER, p. 44, Abh. Mus. Dresden ix, No. 5.
- Cyamobolus obcurus*, p. 285, *scutellaris*, p. 286, Bongu, HARTMANN, Deutsche ent. Zeitschr. 1900, n. spp.
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- Cyrtotrichelus areolatus*, China, FAIRMAIRE, p. 636, Ann. Soc. ent. France lxviii, n. sp.
- Degis politus*, New Guinea, HARTMANN, p. 287, Deutsche ent. Zeitschr. 1900, n. sp.
- Deinocossonus* n. g., p. 147, Cossonides, isolated, for *D. nesiotes* n. sp., Hawaiian Ids., pl. viii, fig. 3, p. 148, PERKINS, Fauna Hawaiianis ii.
- Demineia strumosa*, Celebes, HELLER, p. 36, Abh. Mus. Dresden ix, No. 5, n. sp.
- Derbyia* n. g. near *Tranea*, p. 543, for *D. laminatus* n. sp., N.W. Australia, p. 544, LEA, P. Linn. Soc. N. S. Wales xxiv.
- Desiantha caudata*, pl. fig. 4, p. 645, FROGGATT, Agric. Gaz. N. S. Wales.
- Dryophthorus assimilis*, Christmas Is., GAHAN, p. 116, Monogr. Christmas Island; *D. distinguendus*, Hawaiian Ids., *peles*, Hawaii, p. 140, *nesiotes*, pl. vii, fig. 16, p. 141, *homocorhynchus*, fig. 17, p. 142, Kauai, *oahuensis*, Oahu, *kauaiensis*, p. 143, *insignoides*, *brevipennis*, p. 144, *fuscescens*, *verticalis*, fig. 20, p. 145, Kauai, PERKINS, Fauna Hawaiianis ii : n. spp.
- Dysomma* n. g., p. 151, Cossonides, for *D. sylvicola* n. sp., Kauai, pl. viii, fig. 6, p. 152, PERKINS, t. c.
- Dysperthes pascoei*, Bongu, HARTMANN, p. 287, Deutsche ent. Zeitschr. 1900, n. sp.
- Echinocnemis subaureus*, Transcaspian, REITTER, p. 58, t. c. n. sp.
- Ectennomerus durianus*, Celebes, HELLER, p. 15, Abh. Mus. Dresden ix, No. 5, n. sp.
- Elytrodon luigionii*, Italy, DESBROCHERS, Frelon viii, p. 1, n. sp.
- Episomus fausti*, p. 175, *lucidus*, p. 176, Sumatra, HARTMANN, Wien. ent. Zeit. xix, n. spp.
- Ethemaiella sellata*, pl. fig. 3, larva, p. 643, FROGGATT, Agric. Gaz. N. S. Wales xi.
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- Halorhynchus geniculatus*, W. Australia, LEA, p. 391, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Haloxenus* n. g. Cossonides near *Eutornus*, p. 148, for *H. immigrans* n. sp. Hawaiian Ids., pl. viii, fig. 4, p. 149, PERKINS, Fauna Hawaiianis

- Heteramphus filicum*, Oahu, pl. viii, fig. 7, p. 152, *haleakalæ, frater*, Maui, *molokaiensis*, Molokai, p. 153, *kauaiensis*, Kauai, pl. viii, fig. 11, *nivicola*, Maui, p. 154, PERKINS, t. c. n. spp.
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- Hybomorphus melanosomus*, note on, LEA, p. 529, P. Linn. Soc. N. S. Wales xxiv.
- Hylobius longulus*, China, FAIRMAIRE, p. 633, Ann. Soc. ent. France lxviii, n. sp.
- Hypera*: the species of *Donus*, KRAUSS, pp. 189–205, Wien. ent. Zeit. xix. *H. rubi*, E. Europe, KRAUSS, p. 189, t. c.; *H. corrosa*, Portugal, DESBROCHERS, Frelon viii, p. 2 : n. spp.
- Hypurus podagricus*, Algeria, SCHULTZE, p. 18, Deutsche ent. Zeitschr. 1900; *H. optimemaculatus*, Tunis, PIC, p. 70, Echange xvi : n. spp.
- Lepidophorus lineaticollis*, early stages, KINCAID, p. 379, pl. xxvi, figg. 8–12, P. Washington Ac. ii.
- Listroderes*: numerous n. spp. from Chili, GERMAIN (491): see also *Puranus*.
- Lixus guttulatus*, Akbès, p. 10, *impar*, Jericho, p. 11, DESBROCHERS, Frelon viii; *L. sulphureovittis*, Ashabad, BRANICKI, p. 102, pl. iv, fig. 7, Jahresh. Ver. Trencsen. xxi; *L. bonguensis*, Bongu, HARTMANN, p. 273, Deutsche ent. Zeitschr. 1900 : n. spp.
- Lostianus* n. g. near *Notaris*, p. 9, for *L. sardous* n. sp., Sardinia, p. 10, DESBROCHERS, Frelon viii.
- Magdalais ænescens*, habits, metamorphosis, CHITTENDEN, Bull. Dep. Agric. Ent. xxii, pp. 37–44.
- Mecocorynus tuberosus*, China, FAIRMAIRE, p. 634, Ann. Soc. ent. France lxviii, n. sp.
- Menechirus* n. g. *Megarrhininorum*, p. 278, for *M. oculatus* n. sp., Bongu, p. 279, HARTMANN, Deutsche ent. Zeitschr. 1900.
- Melaunerius*; amended table of species, LEA, pp. 545, 546, P. Linn. Soc. N. S. Wales xxiv.
- Mesites angustior*, Rhodes, PIC, p. 91, Echange xvi, n. sp.
- Micotrogus lostiæ*, Sardinia, DESBROCHERS, Frelon viii, p. 1, n. sp.
- Myllocerus*; characters of Centr. Asian, synonymy, REITTER, pp. 60, 61, Deutsche ent. Zeitschr. 1900.
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- Nea* n. g. *Calandridarum* near *Aplotes*, for *N. princeps* n. sp., Celebes, pl., fig. 18, HELLER, p. 42, Abh. Mus. Dresden ix, No. 5.
- Neliocarus marmoratus*, Spain, STIERLIN, p. 235, Mt. Schweiz. ent. Ges. x, n. sp.
- Neomerimnetes* n. g., p. 226, for *N. destructor* n. sp., S. Australia, p. 227, BLACKBURN, P. Soc. Victoria xii.
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- Nesotocus* n. g. Cossoides isolated, for *N. munroi*, p. 150, *newelli*, *kauaiensis*, pl. viii, fig. 5, p. 151, n. spp., Hawaiian Ids., PERKINS, Fauna Hawaiiensis ii.
- Ocladius abyssinicus*, Abyssinia, PIC, p. 108, Bull. Soc. ent. France 1900; *O. alluaudi*, Madagascar, FAIRMAIRE, p. 21, t. c. : n. spp.
- Oodemas longirostre*, Kauai, pl. viii, fig. 13, p. 155, *dilatatipes*, Oahu, p. 156, *costatum*, *longicorne*, Kauai, *punctulatissimum*, Oahu, p. 157, *molokaiense*, Molokai, fig. 14, *chrysodorum*, Maui, fig. 15, p. 158, *brunneum*, Molokai, *cupreum*, p. 159, *haleakalæ*, Maui, *montanum*, p. 160, *apio-*

- nooides*, p. 161, *affine*, Kauai, *parallelum*, Oahu, p. 162, *graciliforme*, Kauai, fig. 16, *ramulorum*, Oahu, p. 163, *leiothorax*, fig. 17, *flexirostre*, *dubiosum*, p. 164, *striatum*, fig. 26, *puncticollis*, p. 165, *purpurascens*, *pulchrum*, fig. 18, p. 166, *oblongum*, fig. 19, *grande*, fig. 20, p. 167, Kauai, *corticis*, Lanai etc., fig. 21, *pachysoma*, fig. 22, p. 168, *aeolosoma*, p. 169, Kauai, *nitidium*, Oahu, p. 170, *konanum*, *mutiliforme*, p. 171, Hawaii, PERKINS, Fauna Hawaiianus ii : n. spp.
- Oreda dubia*, N. S. Wales, LEA, p. 540, P. Linn. Soc. N. S. Wales xxiv, n. sp.
- Orothreptes* n. g. *Cocoonides* near *Sericotrogus*, for *O. callithrix* n. sp., Hawaii, pl. viii, fig. 2, PERKINS, p. 147, Fauna Hawaiianus ii.
- Orthorrhinus cylindrirostris*, habita, injuries, FROGGATT, pp. 847-851, Agric. Gaz. N. S. W. xi.
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- Otiorrhynchus tenuicornis* var. n. *rhodopus*, KRAUSS, p. 241, Wien. ent. Zeit. xix.
- O. (Arammichnus) vauologeri*, N. Africa, PIC, p. 316, Bull. Soc. ent. France 1900; *O. (Arammichnus) marquardtianus*, *verator*, Caucasus, REITTER, p. 57, Deutsche ent. Zeitschr. 1900 : n. spp.
- Oxyonyx pici*, Jaffa, SCHULTZE, p. 17, t. c. n. sp.
- Oxyopisthen kolbei*, Congo, HARTMANN, p. 123, Wien. ent. Zeit. xix.
- Pachyonyx lineatus*, Bongu, HARTMANN, p. 283, Deutsche ent. Zeitschr. 1900, n. sp.
- Pachyops?* *incertus*, Christmas Is., GAHAN, p. 115, Monogr. Christmas Island, n. sp.
- Pachytychius tychioides*, Jerusalem, DESBROCHERS, p. 12, Frelon viii, n. sp.
- Pantomorus olindæ*, Hawaiian Ida, PERKINS, p. 130, Fauna Hawaiianus ii, n. sp.
- Parimera viticollis*, Celebes, HELLER, p. 37, pl. fig. 14, Abh. Mus. Dresden ix, No. 5, n. sp.
- Perrhebus fasciculatus*, Bongu, HARTMANN, p. 282, Deutsche ent. Zeitschr. 1900, n. sp.
- Phlaeophagosoma dubium*, Christmas Is., GAHAN, p. 114, Monogr. Christmas Is., n. sp.
- Pholicodes subquadriguttatus*, Rhodes, DESBROCHERS, p. 12, Frelon viii, n. sp.
- Phyllobius crassior*, Malta, DESBROCHERS, t. c. p. 3, n. sp.
- Phytonomus subcordicollis*, Tangier, DESBROCHERS, Frelon l. c. n. sp.
- Piezonus*, cf. *Rhynchosoma*.
- Plinthus (Meleus) ronchettii*, Lombardy, REITTER, p. 87, Deutsche ent. Zeitschr. 1900, n. sp.
- Prodiocetes similis*, Celebes, HELLER, p. 43, pl. fig. 20, Abh. Mus. Dresden ix, No. 5, n. sp.
- Prosayleus comosus*, pl. fig. 2, FROGGATT, p. 644, Agric. Gaz. N. S. W. xi.
- Psepholacipus* n. g. near *Oreda*, p. 541, for *P. fossilis*, *Minor*, n. spp., Australia, p. 542, LEA, P. Linn. Soc. N. S. Wales xxiv.
- Psepholax leoninus*, p. 525, *humeralis*, p. 527, Australia, LEA, t. c. n. spp.
- Pseudolodus hospes*, Oahu, PERKINS, p. 149, Fauna Hawaiianus ii, n. sp.
- Pseudoporopterus minahassus*, pl. fig. 15, *impius*, fig. 16, Celebes, HELLER, p. 38, Abh. Mus. Dresden ix, No. 5, n. sp.
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- Rhabdocnemis fausti*, Christmas Is., GAHAN, p. 113, Monogr. Christmas Island, n. sp.

- Rhinocyllus turkestanicus*, Russian Turkestan, DESBROCHERS, Frelon viii, p. 4, n. sp.
- Rhinoncus bosnicus*, Bosnia, SCHULTZE, p. 20, Deutsche ent. Zeitschr. 1900, n. sp.
- Rhinoscapha perfecta*, p. 624, *litoralis*, p. 625, New Guinea, FAUST, Semon Forschungsreisen v, n. spp.
- Rhynchites impressus*, China, FAIRMAIRE, p. 636, Ann. Soc. ent. France lxviii, n. sp.
- Rhyncogonus nitidus*, Kauai, pl. vii, fig. 1, p. 122, *funereus*, Oahu, *squamiger*, pl. vii, fig. 2, p. 123, *stygius*, fig. 3, *minor*, Kauai, p. 124, *mokaiensis*, *dubius*, Molokai, p. 125, *freycinetiae*, fig. 4, *koebelei*, fig. 5, p. 126, *kauaiensis*, Kauai, *sordidus*, p. 127, *lanaiensis*, Lanai, *lahaina*, Maui, *depressus*, fig. 6, p. 128, *vittatus*, fig. 7, *tuberculatus*, p. 129, *sylvicola*, p. 130, Kauai, PERKINS, Fauna Hawaiiensis ii, n. spp.
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- Rhytiprinus pici*, Jericho, DESBROCHERS, p. 14, Frelon viii, n. sp.
- Scoliopisthen* n. g. *Oxyopisthini*, p. 121, for *S. sordidum* n. sp., Congo, p. 122, HARTMANN, Wien. ent. Zeit. xix.
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- Thalattodora* n. g. *Cossonides*, for *T. insignis* n. sp., Lanai, pl. viii, fig. 1, PERKINS, p. 146, Fauna Hawaiiensis ii.
- Thaumostochirus* n. n. for *Thaumastopus* Hart. 1899, HARTMANN, p. 296, Deutsche ent. Zeitschr. 1900.
- Therebirosoma* n. g. near *Therebus*, for *T. rhinariooides* n. sp., New South Wales, LEA, p. 538, P. Linn. Soc. N. S. Wales xxiv.
- Thylacutes proximus*, Tunis, DESBROCHERS, p. 8, Frelon viii, n. sp.
- Trachyphlaeus scaber*, metamorphosis, XAMBEU, p. 94, Naturaliste xxii.
- Tragopus longicollis*, Celebes, HELLER, p. 39, Abh. Mus. Dresden ix, No. 5, n. sp.
- Trochorhopalus corpulentus*, Celebes, HELLER, p. 43, t. c. n. sp.
- Tychius argentatus*, galls, STEFANI, p. 66, Boll. Nat. xx.

SCOLYTIDÆ.

[Cf. BARGMANN (68), BELLEVoye (91), CECCONI (231), GAHAN (478), HOPKINS (599), KNOTEK (737), PERKINS (990), REITTER (1099), ZEHNTNER (1423).]

Stridulating organs, GAHAN (478).

Habits of various *Scolytidae* in East Europe, KNOTEK (737).

Annual generations of *Hylesinus* and *Tomicus*, BARGMANN, Illustr. Zeitschr. Ent. v, p. 169.

American fossil tertiary Coleoptera of the family *Scolytidae*, HOPKINS (599). *Hylastes trifolii*, ravages, metamorphosis, tunnels, CECCONI (231).

Hylastes imitator, Chabarowka, REITTER, p. 59, Deutsche ent. Zeitschr. 1900, n. sp.

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Xyleborus dispar, *saxeseni*, habits, oviposition, proportions of sexes, BELLEVOYE (91); *X. perforans*, natural history, ZEHNTNER (1423); *X. solidus* in Australia, FROGGATT, pp. 640-642, Agric. Gaz. N. S. W. xi.

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BRENTHIDÆ.

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Cacotrachelus n. g. *Eutrichelides*, p. 386, for *C. sculptipennis*, New Britain, pl. xxxv, figs. 8, 8a, *javanus*, Java, p. 387, n. spp., SHARP, t. c.

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ANTHRIBIDÆ.

[Cf. ALLUAUD (23), BLACKBURN (124), GAHAN (479), PERKINS (990), PIC (1032).]

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Apateria apicalis, Christmas Is., GAHAN, p. 119, Monogr. Christmas Island, n. sp.

Araocerodes n. g. for *A. lilliputanus* n. sp., Queensland, BLACKBURN, p. 167, Tr. R. Soc. S. Austral. xxiv, n. sp.

Araocerus sambucinus Boisd. redescribed, BLACKBURN, p. 165, t. c.

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Cacephatus n. g. near *Apateria*, for *C. sericeus* n. sp., Australia, BLACKBURN, p. 151, t. c.

Doticus aequalipennis, Queensland, BLACKBURN, p. 162, t. c. n. sp.

Enspondus n. g., *Tropiderides*, p. 148, for *E. bigibbosus* n. sp., S. Australia, p. 149, BLACKBURN, t. c.

Epargemus n. g., p. 146, *Tropiderides* or *Phlaophilides*, for *E. marmoratus* n. sp., Victoria, p. 147, BLACKBURN, t. c.

Eucorynus mastersi, Queensland, BLACKBURN, p. 144, t. c. n. sp.

Eutrompus n. g., ?near *Tropideres*, p. 145, for *E. dorsoplagiatus* n. sp., Victoria, BLACKBURN, p. 146, t. c.

Litocerus jordani, Christmas Is., GAHAN, p. 118, Monogr. Christmas Island, n. sp.

Metadoticus not distinct from *Doticus*, BLACKBURN, p. 161, Tr. R. Soc. S. Austral. xxiv.

Misthosoma dorsonotata, Queensland, BLACKBURN, p. 161, t. c. n. sp.

Notacia n. g. *Anthribides vrais*, p. 159, for *N. reticulata* n. sp., Australia, p. 160, BLACKBURN, t. c.

Streneoderma n. g. *Anthribides vrais*, for *S. planatum*, p. 157, *contemptum*, p. 158, n. spp., Australia, BLACKBURN, t. c.

- Tophoderes murinus*, Madagascar, ALLUAUD, p. 366, Bull. Mus. Paris 1899, n. sp.
Tropideres? evanescens, S. Australia, BLACKBURN, p. 150, Tr. R. Soc. S. Austral. xxiv, n. sp.
Urodon vestitus var. n. *rufobrunneus*, PIC, p. 10, Mt. Mus. Hamburg xvii, Beih. ii.
U. kraepelini, S. Africa, PIC, p. 9, t. c. n. sp.
Xenocerus nativitatis, Christmas Is., GAHAN, p. 118, Monogr. Christmas Island, n. sp.
Xynotropis n. g. *Tropiderides*, for *X. micans* n. sp., Tasmania, BLACKBURN, p. 152, Tr. R. Soc. S. Austral. xxiv.

PROTERRHINIDÆ.

Proterhinus; PERKINS describes 122 species of this genus, and figures many of them, from the Hawaiian Islands: most of the species are new, but as the family does not occur outside the islands it seems unnecessary to mention the n. spp. individually: Fauna Hawaiiensis ii, pp. 183–246, pls. ix, x.

CERAMBYCIDÆ.

[Cf. ALLUAUD (22, 23), AURIVILLIUS (44), BEDEL (89), BLACKBURN (125), BOAS (130), BRANCSIK (167), CECCONI (232), CHOBAUT (245), ESCALERA (381), FAIRMAIRE (389, 394, 395), GAHAN (478–482, 983), GANGLBÄUER (485), HELLER (573), JAKOWLEFF (654, 655, 657), KINCAID (711), KOLBE (750), LAMEERE (795), MOKRZECKI (916), PIC (999, 1013, 1015, 1021, 1029, 1034), REITTER (1093), SEMENOW (1194, 1200), SEURAT (1202, 1203), SHARP (1208, 1209), WATERHOUSE (1384), XAMBEU (1420).]

XAMBEU continues his descriptions of larvæ of European Longicornia, pp. 109–156 sep. pag. in connection with Echange xvi.

The Cerambycidae of the Hawaiian Islands, SHARP (1209).

Habits and larvæ of Longicorns attacking oaks in Tunis, SEURAT (1202).

Male genitalia, SEURAT (1203).

In reference to PIC's work (999) we must point out that it is so badly edited that it is very difficult to deal with it. REITTER says that it has not been properly published.

Acanthocinus (Astynomus) henschii, Bosnia, REITTER, p. 177, Wien. ent. Zeit. xix, n. sp.

Acmaeops; cf. *Pseudodinoptera*.

Adetus subcostatus, *nigricornis*, p. 412, *fuscopunctatus*, p. 413, Venezuela, AURIVILLIUS, Ofv. Ak. Forh. lvii, n. spp.

Ægocidnus exiguus, Christmas Is., GAHAN, p. 124, pl. xi, fig. 4, Monogr. Christmas Island, n. sp.

Ægosoma mandibulare, China, FAIRMAIRE, p. 637, Ann. Soc. ent. France lxviii; *Æ. hainanensis*, Hainan, GAHAN, p. 347, Ann. Nat. Hist. ii : n. spp.

Agapanthia (*Agapanthiola* subg. n.), *A. euterpe* n. sp., Irkutsk, GANGLBÄUER, p. 139, Verh. Ges. Wien 1; *A. transcaspica*, Askhabad, PIC (999), p. 14, n. sp.?; *A. melanolopha*, China, FAIRMAIRE, p. 643, Ann. Soc. ent. France lxviii : n. spp.

Agapanthiola subg. n., cf. *Agapanthia*.

Alcidion griseum, Venezuela, AURIVILLIUS, p. 417, Ofv. Ak. Forh. lvii, n. sp.

Alphitopola peeli, Somaliland, GAHAN, p. 32, P. Zool. Soc. London 1900, n. sp.

- Amphionycha phaeina*, p. 418, *meinerti*, *niveiceps*, *grisea*, p. 419, *stephanus*, p. 420, Venezuela, AURIVILLIUS, Ofv. Ak. Forh. lvii, n. spp.
- Anoplostethus pauli* and *jardinei* referred to *Calothryza*, GAHAN, p. 33, P. Zool. Soc. London 1900.
- Aparecys* n. g. *Apomecynini*, for *A. praecox* n. sp., E. Africa, KOLBE, Berlin. ent. Zeitschr. xlv.
- Aphrodisium latouchei*, note on, FAIRMAIRE, p. 642, Ann. Soc. ent. France lxviii.
- Apomecyna nigritarsis*, Christmas Is., GAHAN, p. 123, Monogr. Christmas Island, n. sp.
- Archidice carolina*, China, FAIRMAIRE, p. 641, Ann. Soc. ent. France lxviii, n. sp.
- Arrhenotus willeyi*, New Britain, SHARP, p. 383, pl. xxxv, fig. 5, Willey Results iv, n. sp.
- Aspurgus* n. g. near *Nicarete*, for *A. cinerarius* n. sp., Madagascar, FAIRMAIRE, p. 136, Bull. Soc. ent. France 1900.
- Astathes cyanoptera*, Hainan, GAHAN, p. 353, Ann. Nat. Hist. v, n. sp.
- Astrimus hirtus* Fairm. = (*obecurus* Sharp), SHARP, p. 96, Fauna Hawaiiensis ii.
- Batocera lactiflua*, colour var., SHARP, p. 385, Willey Results iv.
- Brachyhammus* n. g. *Monohammini*, p. 304, for *B. granulatus* n. sp., E. Africa, pl. iv, fig. 4, p. 305, KOLBE, Berlin. ent. Zeitschr. xlv.
- Brachyta variabilis*, varr., PIC, p. 82, Echange xvi.
- Cacia triangulifera*, Celebes, HELLER, p. 44, pl., fig. 11, Abh. Mus. Dresden ix, No. 5, n. sp.
- Canoptera marmottani*, female, MAYET, p. 226, Bull. Soc. ent. France 1900; note, FAUVEL, p. 382, and PIC, p. 300, t. c.
- Callidium villosulum*, China, FAIRMAIRE, p. 639, Ann. Soc. ent. France lxviii; *C. sinense*, Shang-hai, PIC, p. 17, Bull. Soc. ent. Belgique xliv : n. spp.
- Callipogon (Eoxenus) relictus*, characters (in Russian, with brief Latin note), SEMENOW, pp. 300–302, Horæ Soc. ent. Ross. xxiv.
- Cerescium quadrimaculatum*, Christmas Is., GAHAN, p. 121, Monogr. Christmas Island, n. sp.
- Chlorida festiva* in Africa, VETH, p. 311, Tijdschr. Ent. xliii.
- Clerocyrtus semenowi*, Buchara, *strigicollis*, Kuldja, p. 663, *manifestus*, Turkestan, *vestitus*, Ferghana, p. 664, *gracilis*, Zeravshan, p. 666, JAKOWLEFF, Horæ Soc. ent. Ross. xxxiv, n. spp.
- Clytarlus mediocrius*, Maui, *debilis*, Hawaii, p. 99, *obecurus*, Kauai, p. 100, *daviger*, Hawaii, *laticollis*, Maui, p. 101, *abnormis*, *nodifer*, Hawaii, p. 102, *longipes*, p. 103, *annectens*, p. 104, Kauai, SHARP, Fauna Hawaiiensis ii, n. spp.
- Clytus lama* var. n. *vesubiensis*, PIC, p. 110, Bull. Soc. ent. France 1900; *C. (Sphegestes)*, table of species, PIC (999), pp. 8–10.
- C. (Clytanthus) theryi*, China, PIC, p. 19, Ann. Soc. ent. Belgique xliv, n. sp.
- Conizonia vittithorax*, Barbary, PIC (999), p. 16, n. sp.?
- Craspedocerus* n. g. *Ptericoptide*, p. 413, for *C. pœcillus* n. sp., Venezuela, p. 414, AURIVILLIUS, Ofv. Ak. Forh. lvii.
- Crossotus bifasciatus*, E. Africa, KOLBE, p. 307, Berlin. ent. Zeitschr. xlv, n. sp.
- Cyrtognathus breviceps*, Formosa, FAIRMAIRE, p. 637, Ann. Soc. ent. France lxviii, n. sp.
- Damiria* n. g. near *Listroptera*, for *D. perrieri* n. sp., Madagascar, FAIRMAIRE, p. 89, Bull. Soc. ent. France 1900.
- Dicelosternus* n. g., p. 308, *Stenaspides*, for *D. corallinus* n. sp., Formosa, p. 309, GAHAN, Ann. Nat. Hist. v.
- Dorcadion bolivari* var. n. *rufipes*, ESCALERA, p. 238, Act. Soc. I

- 1900; *D. sericatum* var. n. *atrides*, REITTER, p. 88, Deutsche ent. Zeitschr. 1900; *D. equestre* varr. n. *niveoconjugatum*, *romaniense*, PIC, p. 352, Ent. Nachr. xxvi; *D. globithorax* var. ? *staudingeri*, PIC, p. 29, Echange xvi; *Dorecadion* spp. or varr. described, PIC (999), pp. 12–14; *D. staudingeri*, name changed to *alexandris*, PIC, p. 56, t. c.
D. rosti, Caucasus, PIC, p. 82, t. c. ? n. sp.; *D. lesnei*, p. 233, *navasi*, p. 234, *ferdinandi*, p. 235, *laufferi*, p. 236, *marmottani*, p. 237, *steparius*, p. 239, *grisescens*, p. 240, Spain, ESCALERA, Act. Soc. Espan. 1900; *D. ciscaucasicum*, Stavropol, p. 59, *apicipenne*, Kuldja, p. 61, *hyrcanum*, N. Persia, p. 64, *bisignatum*, Transcaucasus, p. 66, *D. (Compsodorcadion) phenax*, W. Siberia, p. 68, JAKOWLEFF, Horae Soc. ent. Ross. xxxiv; *D. (Compsodorcadion) pantherinum*, Kirghiz Steppes, p. 147, *sokolowi*, Semipalatinsk, p. 151, *tschitscherini*, Sémiretchie, p. 153, JAKOWLEFF, op. cit. xxxiv : n. spp.
Ergates akbesianus, Syria, PIC, p. 81, Echange xvi, n. sp.
Eugoa rufiferus Gerst., pl. iv, fig. 3, p. 301, KOLBE, Berlin. ent. Zeitschr. xlv.
Eustathes flava var. n. *femoralis*, HELLER, p. 46, Abh. Mus. Dresden ix, No. 5.
Examnes philippensis Newm. = (*longicornis* Pasc. = *idoneus* Pasc.), GAHAN, p. 122, Monogr. Christmas Island.
E. affinis, Christmas Is., GAHAN, p. 122, t. c. n. sp.
Glenea extrema, New Britain, SHARP, p. 385, Willey Results iv, n. sp.
Gnatholeophanes n. g. *Hesperophanina*, for *G. octosignatus* n. sp., E. Africa, pl. iv, fig. 2, KOLBE, p. 301, Berlin. ent. Zeitschr. xlv.
Gnomidolon meinerti, Venezuela, AURIVILLIUS, p. 410, Ofv. Ak. Forh. lvii, n. sp.
Grammopsis n. g. for *Hippopsis clavigera* Bates, and *G. minima* n. sp., Venezuela, AURIVILLIUS, p. 416, t. c.
Hippopsis meinerti, Venezuela, AURIVILLIUS, p. 416, t. c. n. sp.
Homaeota letabilis, Victoria, BLACKBURN, p. 232, P. Soc. Victoria xii, n. sp.
Idactus granti, Sokotra, GAHAN, p. 12, Bull. Liverp. Mus. iii; *I. succinus*, E. Africa, KOLBE, p. 306, Berlin. ent. Zeitschr. xlvi : n. spp.
Jamwonus sticheli, E. Africa, KOLBE, p. 297, pl. iv, fig. 1, t. c. n. sp.
Lamia textor and *Morimus asper*, injurious habits, CECCONI (232).
Lasiopeplus ambiguus, E. Africa, KOLBE, p. 306, Berlin. ent. Zeitschr. 1900, n. sp.
Leontium lameeri, China, PIC, p. 18, Ann. Soc. ent. Belgique xliv, n. sp.
Leprodera bioculata, China, FAIRMAIRE, p. 641, Ann. Soc. ent. France lxviii, n. sp.
Leptalia macilenta, larva, KINCAID, p. 376, pl. xxv, figg. 8–12, P. Washington Ac. ii.
Leptura (Stenura) vaucherii, Algeria, BEDEL, p. 336, Bull. Soc. ent. France 1900; *L. suberis*, Algeria, CHOBAUT, p. 265, t. c.; *L. dissimilis*, China, FAIRMAIRE, p. 639, Ann. Soc. ent. France lxviii : n. spp.
Leucographus murinus, Madagascar, ALLUAUD, p. 367, Bull. Mus. Paris 1899, n. sp.
Lobarthon subg. n. of *Prionus* for part of *Psilopus* Jak., SEMENOW, p. 254 and p. 333, Horae Soc. ent. Ross. xxxiv.
Macroprionus subg. n., cf. *Prionus*.
Mallotia græca var. n. *cardoriensis*, PIC, p. 109, Bull. Soc. ent. France 1900.
Mecothyrea peregrina, *auratipennis*, E. Africa, KOLBE, p. 302, Berlin. ent. Zeitschr. xlvi, n. spp.
Melanauster macrospilus, p. 349, *similis*, p. 350, Hainan, GAHAN, Ann. Nat. Hist. v, n. sp.
Micromallotia n. g. for *M. theresa* n. sp., Mardin, PIC (999), p. 15.
Myiodola n. g. near *Anthribola*, p. 87, for *M. perrieri*, *muscaria*, n. spp.,

- Madagascar, p. 88, and *Sagridola scalabrii* Fairm., FAIRMAIRE, Bull. Soc. ent. France 1900.
- Neodorcadion przewalskii* redescribed, JAKOWLEFF, pp. 71–73, Horæ Soc. ent. Ross. xxiv.
- Neopolyarthron* subg. n. of *Prionus*, SEMENOW, p. 255, t. c.
- Niphona hookeri*, E. Asia, GAHAN, p. 351, Ann. Nat. Hist. v, n. sp.
- Nyctonympha glauca, annulata*, Venezuela, AURIVILLIUS, p. 420, Ofv. Ak. Forh. lvii, n. sp.
- Oberea oculata* var. n. *borysthenica*, larva and habits, MOKRZECKI, Horæ Soc. ent. Ross. xxxiv, pp. 294–299, pl. i; *O. bimaculata*, larval habits, WEBSTER, p. 437, Ent. News Philad. xi.
- Oeme fuscus*, Sokotra, GAHAN, p. 12, Bull. Liverp. Mus. iii, n. sp.
- Oncoderes*: note on habits and metamorphosis, OHAUS (956, p. 173).
- Pachydissus* (*Derolus*) *somalicus*, Somaliland, GAHAN, p. 32, P. Zool. Soc. London 1900, n. sp.
- Pelargoderus apicalis*, Hainan, GAHAN, p. 348, Ann. Nat. Hist. v, n. sp.
- Peribaeum meinerti*, Venezuela, AURIVILLIUS, p. 409, Ofv. Ak. Forh. lvii, n. sp.
- Philematium sansibaricum* var. n. *transversalis*, KOLBE, p. 303, Berlin. ent. Zeitschr. 1900.
- Philus antennatus*, stridulating organ, GAHAN, p. 347, Ann. Nat. Hist. v.
- Phytocia*: notes on with ?new subgenera, PIC, p. 16, Bull. Soc. zool. France xxv; *P. (Helladia)*, notes on species, PIC, pp. 139, 140, Bull. Soc. ent. France 1900; *P. croceipes* var. *annulifer*, *P. humeralis* var. *bethaniensis*, PIC, p. 67, Ent. Nachr. xxvi.
- P. akbesiana*, Syria, PIC, p. 20, Echange xvi, ?n. sp.; *P. ingeniculata*, *P. (Helladia) dilaticollis*, Syria, PIC, Ent. Nachr. xxvi, p. 67 : n. spp.
- Plagithmysus permundus*, p. 105, *diana*, pl. vi, fig. 11, Kauai, *collaris*, Maui, fig. 13, p. 107, *lamarckianus*, Hawaii, p. 110, *munroi*, Kauai, fig. 19, p. 112, SHARP, Fauna Hawaïensis ii, n. spp.
- Planodes stratus*, Celebes, HELLER, p. 45, pl. fig. 7, Abh. Mus. Dresden ix, No. 5, n. sp.
- Plocederus conradti* var. *strigicollis*, KOLBE, p. 303, Berlin. ent. Zeitschr. xlvi.
- Pogonarthron* subg. n., cf. *Polyarthron*.
- Polyarthron*; notes on species, with new subgenera, *Pogonarthron*, *Polylobarthron*, SEMENOW, pp. 251–259, Horæ Soc. ent. Ross. xxxiv; *P.*: the subgenera, PIC, pp. 2, 3, Miscell. ent. viii.
- P.* (subg. n. *Pogonarthron*) *bedeli*, Buchara, SEMENOW, p. 249, Horæ Soc. ent. Ross. xxxiv, n. sp.
- Polylobarthron* subg. n. of *Polyarthron* for *P. margelanicum*, SEMENOW, pp. 254, 258, t. c.
- Praonetha perplexa* referred to *Pterolophia* and figured, pl. xi, fig. 5, p. 123, GAHAN, Monogr. Christmas Island.
- P. sinensis*, China, FAIRMAIRE, p. 642, Ann. Soc. ent. France 1900, n. sp.
- Prinobius coxalis*, Christmas Is., GAHAN, p. 120, Monogr. Christmas Island, n. sp.
- Prionocalus simonsi*, p. 504, *whitei*, p. 505, Ecuador, *uniformis*, Peru, p. 505, WATERHOUSE, Ann. Nat. Hist. v, n. spp.
- Prionus*; revision of palæartic, SEMENOW, pp. 325–334, Horæ Soc. ent. Ross. xxxiv; *P. brachypterus alpherakii* subsp. n., id. t. c. p. 324; *P.*, for subgenn. n. cf. *Neopolyarthron*, *Lobarthron*, *Macroprionus*.
- P. angheri*, Ashabad, BRANCSIK, p. 102, pl. iv, fig. 8, Jahresh. Ver. Trencsen. xxi; *P. (Macroprionus* subg. n.) *heros*, Chinese Turkestan, SEMENOW, p. 320, Horæ Soc. ent. Ross. xxxiv : n. spp.
- Prymnopteryx meinerti*, Venezuela, AURIVILLIUS, p. 414, Ofv. Ak. Forh. lvii, n. sp.
- Pseudodinoptera* n. subg. of *Acmaeops* for *A. daghestanica* PIC, PIC, p. 82, Echange xvi.

- Pseudopidonia* n. g. near *Pidonia*, for *P. amurensis* n. sp., Siberia, PIC, p. 81, t. c.
Psilopus; cf. *Lobarthon*.
Pyresthes rugicollis, China, FAIRMAIRE, p. 642, Ann. Soc. ent. France lxviii, n. sp.
Rhagium sinense, China, FAIRMAIRE, p. 638, t. c. n. sp.
Rosalia alpina, variation, REITTER, pp. 130–132, Wien. ent. Zeit. xix; PIC, p. 11, Ent. Nachr. xxvi and p. 59, Echange xvi; CSIKI, pp. 100–102, Rov. Lapok vii.
Saperda populnea; instinct, larval food-habits, BOAS (130).
S. maculithorax, Japan, PIC, p. 19, Ann. Soc. ent. Belgique xliv, n. sp.
Sphingnotus yorkensis Fairm. referred to *Tmesisternus*, SHARP, p. 384, Willey Results iv.
Stenoderus concolor Mad., BLACKBURN, p. 230, P. Soc. Victoria xii.
Sybilla dancoi, Patagonia, LAMEERE, p. 112, Ann. Soc. ent. Belgique xliv, n. sp.
Sybrinus n. g. near *Sybra*, p. 12, for *S. commixtus* n. sp., Sokotra, p. 13, GAHAN, Bull. Liverp. Mus. iii.
Syllitus heros, p. 231, *microps*, p. 232, Australia, BLACKBURN, P. Soc. Victoria xii, n. spp.
Tetropriopsis, classification, CHOBAUT, p. 263, Bull. Soc. ent. France 1900; note, PIC, p. 30, t. c.
Thoris septemguttata, p. 228, *mærens*, p. 229, Australia, BLACKBURN, P. Soc. Victoria xii, n. spp.
Trachytola maculipennis, p. 639, *nodicollis*, Tonkin, *rugiscapus*, China, p. 640, FAIRMAIRE, Ann. Soc. ent. France lxviii, n. spp.
Tragiscoschema nigroscriptum Fairm., pl. iv, fig. 5, p. 307, KOLBE, Berlin. ent. Zeitschr. xlv.
Vadonia unipunctata varr., PIC, Frelon viii, sep. pag. pp. 3, 4.
Xiphotheta luctifera, ♂ characters, SHARP, p. 385, pl. xxxv, fig. 6, Willey Results iv.
Xystrocera janthinicornis, p. 299, *equabilis*, p. 300, E. Africa, KOLBE, Berlin. ent. Zeitschr. 1900, n. spp.

BRUCHIDÆ.

[Cf. BLACKBURN (123), PIC (1006), SEURAT (1205), SHARP (1209).]

Tracheal system of larva, distinctions from *Curculionidæ*, SEURAT (1205).
Bruchus lyndhurstensis, p. 62, *oodnadatto*, *quornensis*, p. 63, *persimulans*, p. 64, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxiv; *B. scapularis*, Brazil, PIC, p. 29, Bull. Soc. ent. France 1900 : n. spp.

CHRYSMELIDÆ.

[Cf. BLACKBURN (123, 124), BELLEVoye (90), BERG (100), BORDAS (144, 146), BRANSIK (167), CSIKI (299, 300, 302), FABRE (385), FAIRMAIRE (394), FORMANEK (440), GAHAN (478, 479), GESTRO (496–498), HELLER (573), JACOBSON (640), JACOBY (644–648), KINCAID (711), KOLBE, W. (754), LESNE (816), MEIER (884, 885), PIC (1025–1027), REITTER (1092, 1095, 1099), SANDERSON (1147), SHARP (1209), SPAETH (1258, 1259), WEISE (131, 1394, 1396, 1397, 1398, 1401, 1403).]

Corrections and additions to Douckier's catalogue of *Hispidae*, GESTRO, pp. 433–440, Ann. Mus. Genova xl.

Catalogue of *Sagrides*, CLAVAREAU, pp. 269–280, Ann. Soc. ent. Belgique xliv and PIC, t. c. pp. 353, 354.

- Structure of larvae and respiratory appendages of *Donacia*, SANDERSON (1147).
- Male sexual glands, BORDAS (146).
- Eggs and case-making of *Clythrides*, FABRE (385).
- Stridulating organs of *Hispida*, *Clythridæ*, GAHAN (478).
- Achanops puncticollis*, S. Africa, JACOBY, p. 219, P. Zool. Soc. London 1900, n. sp.
- Aenidea bengalensis*, India, JACOBY, p. 133, Mem. Soc. ent. Belgique vii, n. sp.
- Agbalus nigrovioletaceus*, p. 464, *bolivianus*, p. 465, *chiriquensis*, *subcostatus*, p. 466, *strigicollis*, p. 467, S. America, JACOBY, Tr. ent. Soc. London 1900, n. spp.
- Alethaxius angulicollis*, p. 490, *A. ? sericeus*, p. 491, *A. verrucosus*, p. 492, S. America, JACOBY, t. c. n. spp.
- Alurnus*, synonymous note, GESTRO, p. 468, Ann. Mus. Genova xl.
- Anthipha mandarensis*, India, JACOBY, p. 134, Mem. Soc. ent. Belgique vii, n. sp.
- Aphthona ovatipennis*, p. 245, *bicolor*, *marginata*, p. 246, *minuta*, p. 247, Africa, JACOBY, P. Zool. Soc. London 1900; *A. indica*, p. 120, *hugeli*, p. 121, India, JACOBY, Mem. Soc. ent. Belgique vii : n. spp.
- Aracyntha thoracica*, Brazil, JACOBY, p. 471, Tr. ent. Soc. London 1900, n. sp.
- Argoa mucronata*, Brazil, JACOBY, p. 600, t. c. n. sp.
- Asbecesta ornaticollis*, *ornata*, pl. xx, fig. 11, Africa, JACOBY, p. 255, P. Zool. Soc. London 1900, n. spp.
- Aspidolopha usambarica*, Africa, *maniensis*, Philippines, WEISE, p. 448, Deutsche ent. Zeitschr. 1900, n. spp.
- Aspidomorpha difformis*, characters, WEISE, p. 295, Arch. Naturg. lxvi.
- A. gorhami*, Natal, WEISE, p. 445, Deutsche ent. Zeitschr. 1900, n. sp.
- Blepharida regularis*, Africa, JACOBY, p. 252, P. Zool. Soc. London 1900, n. sp.
- Campylochira fulvicornis*, Brazil, JACOBY, p. 493, Tr. ent. Soc. London 1900, n. sp.
- Campiternes pubifrons*, Delagoa Bay, JACOBY, p. 209, P. Zool. Soc. London 1900, n. sp.
- Canderza centromaculata*, Natal, JACOBY, pl. xx, fig. 10, *sulcicollis*, Mashonaland, p. 261, *moliroensis*, Congo, *oneili*, p. 262, *livingstoni*, p. 263, S. Africa, JACOBY, t. c.; *C. erratica*, p. 137, *quadrimaculata*, *labiata*, p. 138, *trifasciata*, p. 139, India, JACOBY, Mem. Soc. ent. Belgique vii, n. spp.
- Canistra bitorosa*, Brazil, WEISE, p. 460, Deutsche ent. Zeitschr. 1900, n. sp.
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- Otilea fulva*, p. 494, *foveipennis*, p. 495, S. America, JACOBY, Tr. ent. Soc. London 1900, n. spp.
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- Phytodecta quinquepunctata* var. n. *flavipennis*, KRAUSS, p. 241, Wien. ent. Zeit. xix.
- Plagiодера congoensis*, Africa, JACOBY, p. 242, P. Zool. Soc. London 1900, n. sp.
- Plateumaris sulcifrons*, Zeitun, WEISE, p. 267, Arch. Naturg. lxvi, n. sp.
- Platyptria sumatrensis*, Sumatra, CSIKI, p. 196, Termes. Fuzetek xxiii, n. sp.
- Platyxantha elegans* (Har. as *Luperus*) = *costatipennis* Jac. = *Ap. costipennis* Fairm. = *Megalogn. haroldi* Fairm., WEISE, p. 457, Deutsche ent. Zeitschr. 1900.
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- Podagrion desertorum*, Ashabad, BRANCSIK, p. 104, Jahresh. Ver. Trencsen. xxi, n. sp.
- Pocadius bogianii*, Paraguay, SPAETH, p. 577, Ann. Mus. Genova xl, n. sp.
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- Polychalca cibrata*, Colombia, WEISE, p. 460, Deutsche ent. Zeitschr. 1900, n. spp.
- Promecotheca papuana*, New Guinea, CSIKI, p. 80, Termes. Fuzetek xxiv; *P. biroi*, New Guinea, CSIKI, p. 196, t. c. : n. spp.
- Psecadia* n. n. for *Psecas* Weise, WEISE, p. 458, Deutsche ent. Zeitschr. 1900.
- Pseudocalaspidea cassidea* var. n. *jacobsoni*, CSIKI, p. 403, Termes. Fuzetek xxiii.
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- P. cupreofemorata*, Mashonaland, pl. xx, fig. 4, *severini*, Congo, p. 225, JACOBY, t. c.; *P. himalayensis*, India, JACOBY, p. 111, Mem. Soc. ent. Belgique vii : n. spp.
- Pseudoderia cyanipennis*, Bengal, JACOBY, p. 122, t. c. n. sp.
- Pseudomelus nigripennis*, Cameroons, JACOBY, p. 421, P. Zool. Soc. London 1900, n. sp.
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- P. tenuipunctata*, Christmas Is., GAHAN, p. 127, Monogr. Christmas Island, n. sp.
- Rhabdopteris peruvensis*, p. 482, *imitans*, *colombiensis*, p. 483, *apicornis*, p. 484, *amazonicus*, p. 485, *apicipes*, *abdominalis*, p. 486, *venezuelensis*, p. 487, *fulvicollis*, p. 488, *semifulvus*, p. 489, S. America, JACOBY, Tr. ent. Soc. London 1900, n. spp.
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- Rhyparida rossi*, p. 124, *modesta*, p. 125, Christmas Is., GAHAN, Monogr. Christmas Island, n. spp.
- Rupilia angulaticollis*, p. 66, *approximans*, p. 67, Queensland, BLACKBURN, Tr. R. Soc. S. Austral. xxiv, n. spp.

- Sagra ferox* = (*longefemorata* Fairm., *opaca* Jac., *longipes* Kolbe and *kolbei* Clav.), *S. striatipennis* Jac. = (*sulcipennis* K.), *S. cambieri* Duv. = (*tibialis* Fairm.), WEISE, p. 446, Deutsche ent. Zeitschr. 1900; *S. kolbei* n. n. for *longipes* K. nec Baly, CLAVAREAU, p. 269, Ann. Soc. ent. Belgique xlii.
- Sardooides nigricornis*, Natal, JACOBY, p. 263, P. Zool. Soc. London 1900, n. sp.
- Sastrooides tibialis*, India, JACOBY, p. 131, Mem. Soc. ent. Belgique vii, n. sp.
- Scelodonta celebensis* and *laeviuscula*, note on, HELLER, p. 46, Abh. Mus. Dresden ix, No. 5.
- S. sexplagiata*, Natal, JACOBY, p. 226, pl. xx, fig. 5, P. Zool. Soc. London 1900, n. sp.
- Semicnema macella*, Kiachta, WEISE, Arch. Naturg. lxvi, p. 291, n. sp.
- Sermyla maculata*, referred to *Sermylloides*, JACOBY, p. 257, P. Zool. Soc. London 1900.
- Sermylloides unifasciata*, Mashonaland, JACOBY, p. 257, t. c. n. sp.
- Serraphula elongata*, S. Africa, JACOBY, p. 247, t. c. n. sp.
- Silurnus* n. g. near *Alurnus*, p. 219, for *S. consanguineus* n. sp., Sao Paulo, p. 218, WEISE, Deutsche ent. Zeitschr. 1900.
- Sphaeroderma ornatipennis* n. n. for *flavoplagiata* Jac. 1896, JACOBY, p. 124, Mem. Soc. ent. Belgique vii.
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- Sphaeropis fruhstorferi*, Bahia, JACOBY, p. 499, Tr. ent. Soc. London 1900, n. sp.
- Syagrus opacus*, *antennatus*, S. Africa, JACOBY, p. 231, P. Zool. Soc. London 1900, n. spp.
- Syoplia africanus*, W. Africa, JACOBY, p. 265, t. c.; *S. nigripennis*, India, JACOBY, p. 132, Mem. Soc. ent. Belgique vii : n. spp.
- Taphinella bengalensis*, India, JACOBY, p. 140, Mem. Soc. ent. Belgique vii, n. sp.
- Therpis* n. g. near *Aphophylia*, p. 455, for *T. smaragdina* n. sp., Mombas, WEISE, p. 456, Deutsche ent. Zeitschr. 1900.
- Timarcha violaceonigra* var. *n. fracassii*, MEIER, p. 78, Ent. Nachr. xxvi.
- T. schencklingi*, Abruzzi, MEIER, p. 161, t. c. n. sp.
- Trichochrysea severini*, Bengal, JACOBY, p. 109, Mem. Soc. ent. Belgique vii, n. sp.
- Triclionia indica*, *lavicollis*, India, JACOBY, p. 110, t. c. n. spp.
- Xanthonia nigripennis*, India, JACOBY, p. 100, Mem. Soc. ent. Belgique vii, n. sp.
- Zeugophora anchora*, Centr. Asia, p. 164, pl. i, fig. 9, with var. *pseudancora*, p. 165, REITTER, Wien. ent. Zeit. xix, n. sp.

EROTYLIDÆ (incl. LANGURIIDÆ).

[Cf. GORHAM (512, 513), HELLER (573), REITTER (1099).]

- Amblyopus haemorrhous* referred to *Amblyscelis*, habitat queried, GORHAM, p. 90, Ann. Nat. Hist. v.
- Amblyscelis nigrinus*, Natal, *conradti*, W. Africa, p. 88, *brunneus*, Natal, p. 89, GORHAM, t. c. n. spp.
- Anadastus lorianus*, p. 361, *haroldi*, p. 362, *gagaticeps*, p. 364, New Guinea, GORHAM, Ann. Mus. Genova xl, n. spp.
- Callilanguria asymmetrica*, Celebes, HELLER, p. 5, pl. fig. 3, Abh. Mus. Dresden ix, No. 5, n. sp.

- Crotchia fusiformis*, Paraguay, *balsanii*, Bolivia, GORHAM, p. 397, Ann. Mus. Genova xl, n. spp.
Cyrtengis n. g. near *Dacne*, for *C. testacea* n. sp., Buchara, REITTER, p. 51, Deutsche ent. Zeitschr. 1900.
Dasydactylus solarii, Nicaragua, GORHAM, p. 365, Ann. Mus. Genova xl, n. sp.
Lacerobelus n. g. near *Fatua*, for *L. dentipes*, p. 358, *longimanus*, p. 360, n. spp., Sumatra, GORHAM, t. c.
Languriosoma thoracica, N. Guinea, GORHAM, p. 360, t. c. n. sp.
Lophocrotaphus n. g. p. 91, near *Amblyopus*, for *L. guineensis* n. sp., Africa, p. 92, GORHAM, Ann. Nat. Hist. v.
Neocoptengis n. g. for *N. cyanipes* n. sp., Celebes, HELLER, p. 6, pl. fig. 2, Abh. Mus. Dresden ix, No. 5.
Promecolanguria marshalli, *trogositoides*, Natal, GORHAM, p. 87, Ann. Nat. Hist. v, n. spp.
Pycnogasteria n. g., p. 90, near *Amblyopus*, for *P. kraatzi* n. sp., W. Africa, GORHAM, p. 91, t. c.
Tetralanguria elongata, variation, GORHAM, p. 356, Ann. Mus. Genova xl.
Tritoma jakolewi = (*subbasalis* Reitt.), MÜLLER, p. 23, Wien. ent. Zeit. xix.
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ENDOMYCHIDÆ.

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- Stridulating organs, GAHAN (478), pp. 435–437.
Ancylolopus nigrofuscus, Natal, GORHAM, p. 93, Ann. Nat. Hist. v, n. sp.
Dapea opuntia var. n., *sahlbergi*, REITTER, p. 219, Wien. ent. Zeit. xix.
Encymon erima, New Guinea, CSIKI, p. 123, Termes. Fuzetek xxiii, n. sp.
Gibbiger subg. n. of *Milichius* for *M. fasciatus* Heller, CSIKI, p. 377, t. c.
Hapioscelis nitidus, *nossibeanus*, p. 400, *madecassus*, p. 401, Madagascar, CSIKI, t. c. n. spp.
Milichius javanicus, Java, CSIKI, p. 376, t. c. n. sp.
Mycetina cruciata var. n. *balcanica*, CSIKI, p. 401, t. c.
M. montivaga, Darjiling, id., l. c. n. sp.
Stenotarsodes n. g. for Asiatic and Australian *Stenotarsus*, with *S. quadrimaculatus*, Australia, p. 401, *pulcher*, *flavotestaceus*, New Guinea, p. 402, n. sp., CSIKI, t. c.
Stenotarsus biroti, New Guinea, CSIKI, p. 124, t. c. n. sp.
Trycherus elegans, Cameroons, CSIKI, p. 400, t. c. n. sp.

COCCINELLIDÆ.

[Cf. ARROW (36), BLACKRURN (123), BORDAS (144), FLEISCHER (423, 426), JACOBSON (641), PIC (1031), SEMENOW (1196), WEISE (1395, 1396, 1399, 1400).]

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Alesia annulata var. *bimaculata*, CANNAVIELLO, p. 303, Bull. Soc. ent. Ital. xxxii.
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- Aspidimerus circumflexus* var., WEISE, p. 423, t. c.
A. horni, Ceylon, id. p. 424, t. c. n. sp.
Autotela n. g. near *Celophora*, p. 125, for *A. picticollis*, p. 126, *cincta*,
 p. 127, *vittula*, *nigra*, p. 128, n. spp., E. Africa, WEISE, t. c.
Brumus 8-signatus var. n. *conjunctionis*, FLEISCHER, p. 118, Wien. ent. Zeit.
 xix.
B. mongolicus, Mongolia, FLEISCHER, l. c.; *B. ceylonicus*, Trincomalee,
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Chilocorus tibialis, larva, WEISE, p. 129, Deutsche ent. Zeitschr. 1900.
C. bennigseni, E. Africa, WEISE, p. 128, t. c. n. sp.
Clanini; characters and components, WEISE, pp. 430–433, t. c.
Clania pilosula, p. 429, *opaca*, p. 430, Ceylon, WEISE, t. c. n. spp.
Coccidula rufa var. n. *nigropunctata*, REITTER, p. 220, Wien. ent. Zeit.
 xix.
Coccinella 11-punctata var. n. *ocellata*, CHURCHEVILLE, p. 26, Miscell. ent.
 viii; *C. 14-pustulata* var. n. *turkestanica*, FLEISCHER, p. 116, Wien.
 ent. Zeit. xix; *C. sinuato-marginata* var. n. *trilobata*, FLEISCHER,
 p. 245, t. c.; *C. distincta*, habits, DONISTHORPE, p. 173, Ent. Rec. xii.
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 Deutsche ent. Zeitschr. 1900; *C. mombonensis*, Africa, WEISE, p. 123,
 t. c. : n. spp.
Cryptogonus orbicularis and *fulvoeinctus* var., WEISE, pp. 424, 425, t. c.
Cydonia zonata, p. 123, *angulifera*, p. 124, E. Africa, WEISE, t. c. n. spp.
Dionus rubidus var. n. *morio*, FLEISCHER, p. 120, Wien. ent. Zeit. xix.
Dysis orientalis, E. Africa, WEISE, p. 125, Deutsche ent. Zeitschr. 1900,
 n. sp.
Empia vittata, Ceylon, WEISE, p. 444, t. c. n. sp.
Epilachna bissepunctata = *schoensis* Gorh., *E. godarti* characters, WEISE,
 p. 115, t. c.; *E. tarda*, *morosa*, p. 114, *severini*, p. 115, E. Africa,
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 xxxiv, n. sp.
Halyzia 14-guttata var. n. *nigripennis*, FLEISCHER, p. 117, Wien. ent.
 Zeit. xix.
H. reitteri, Margelan, FLEISCHER, p. 117, t. c. n. sp.
Hippodamus 7-maculata var. n. *equiseti*, MEIER, p. 78, Ent. Nachr. xxvi.
Horniolus n. g. near *Nephus*, p. 442, for *H. dispar*, n. sp. Ceylon, p. 443,
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Hyperaspis transversoguttata var. n. *10-guttata*, *H. desertorum* var. n.
collaris, FLEISCHER, p. 119, t. c.
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Ortalia 12-maculata, W. Africa, WEISE, p. 129, Deutsche ent. Zeitschr.
 1900; *O. horni*, p. 433, *minuta*, p. 434, Ceylon, WEISE, t. c.; *Pharus*
numidicus (Sicard), Algeria, PIC, p. 91, Echange xvi, n. sp.; *P. horni*,
 Ceylon, WEISE, p. 434, Deutsche ent. Zeitschr. 1900 : n. spp.
Platynaspis ceylonica, Ceylon, WEISE, p. 422, t. c. n. sp.
Puluis victoris var. *obsignatus*, WEISE, p. 435, t. c.
P. severus, E. Africa, WEISE, p. 131, t. c.; *P. musculus*, p. 438, *gratiosus*,
 p. 439, Ceylon, WEISE, t. c. n. spp.
Rodolia ferruginea, p. 130, *picticollis*, p. 131, E. Africa, WEISE, t. c. n. spp.
Scotoscymnus n. n. for *Scymnomorphus* Weise nec Bl., WEISE, p. 458,
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- Scymnus rubromaculatus* var. *triangulifer*, *S. dorsalis* n. n. for *mongolicus*, infra, FLEISCHER, p. 235, Wien. ent. Zeit. xix; *S. frontalis* var. n. *4-guttatus*, FLEISCHER, p. 120, t. c.
- S. (Pullus) mongolicus*, Mongolia, FLEISCHER, p. 119, t. c.; *S. (Nephus) crucifer*, Buchara, FLEISCHER, p. 235, t. c. n. spp.
- Semichnoodes ceylonica*, Ceylon, WEISE, p. 428, Deutsche ent. Zeitschr. 1900, n. sp.
- Solanophila firma*, *semimiona*, p. 117, *spretula*, p. 118, *soluta*, p. 119, Africa, WEISE, t. c. n. spp.
- Sticholotis horni*, Ceylon, WEISE, p. 429, t. c. n. sp.
- Tropha* n. g. near *Solanophila*, p. 121, for *T. variabilis*, p. 122, n. sp., East Africa, p. 122, WEISE, t. c.

CORYLOPHIDÆ and PSEUDOCORYLOPHIDÆ.

[Cf. CASEY (229), DODERO (336), REITTER (1101).]

Classification and revision of N. American, CASEY, pp. 60–75, J. N. York Ent. Soc. viii.

Anisomeristes masoni n. n. for *A. basalis* Matth. nec Sharp, REITTER, p. 132, Wien. ent. Zeit. xix.

Aphanoccephalus hemisphaericus var. *birmanicus*, DODERO, p. 565, Ann. Mus. Genova xl.

A. fæa, Burma, id. p. 566, t. c. n. sp.

Arthrolips nimius, p. 72, *cinctus*, *sparsus*, p. 73, N. America, CASEY, J. N. York Ent. Soc. viii, n. spp.

Bathona n. g. for *B. carolina*, *virginica*, *convexa*, *sphæricula*, n. spp., N. America, CASEY, t. c.

Clypeastodes n. g. for *Clypeaster maderæ* Kr., CASEY, p. 70, t. c.

Corylophodes impunctatus, *subtropicus*, N. America, CASEY, p. 63, t. c. n. spp.

Eutrilicia n. g., p. 65, for *E. brunnea*, n. sp., California, p. 66, CASEY, t. c.

Gronevus n. g., p. 63, for *G. sticticus*, *fascicornis*, *hesperus*, *lævis*, n. spp., N. America, p. 64, and *truncatus* Lec., CASEY, t. c.

Molamba n. g. for part of *Sacium*, with *M. obesa*, *specularis*, *parvula*, *ornata*, p. 71, *decora*, p. 72, n. spp., N. America, CASEY, t. c.

Orthoperus princeps, p. 66, *texanus*, *micros*, *arizonicus*, *alutaceus*, N. America, *bahamicus*, Bahamas, p. 67, CASEY, t. c. n. spp.

Rypobius minutus, Texas, CASEY, p. 65, t. c. n. sp.

Sacium formosum, note on, DODERO, p. 565, Ann. Mus. Genova xl.

S. montanum, *nigrum*, N. America, CASEY, p. 70, J. N. York. Ent. Soc. viii, n. spp.

Sericoderus chobaerti, S. France, REITTER, p. 82, Deutsche ent. Zeitschr. 1900; *S. quadratus*, p. 68, *debilis*, p. 69, N. America, CASEY, J. N. York Ent. Soc. viii : n. spp.

(B.) *HYMENOPTERA.*

The superfamilies, pp. 2-4, the families, pp. 190-205, of *Hymenoptera* ;
 ASHMEAD, P. U. S. Mus. xxiii.

ASHMEAD continues his papers on the classification of the Order, dealing with his superfamily Vespoidea, which includes not only *Diptoptera*, but also *Pompilidae*, *Chrysididae*, *Bethylidae*, *Trigonalidae*, and the *Scolioidea* families of *Fosoria*, Canad. Ent. xxxii.

The *Hymenoptera* of the W. Indies, 1290 species, ASHMEAD (40).

Anatomy and development of male armature ; nomenclature of parts ; supposed male and female homologues, ZANDER (1422).

Fat-body and oenocytes of *Apis*, KOSCHEVNIKOV (759).

Parthenogenesis of honey-bee, WEISMANN (1404).

*ACULEATA.**APIDÆ.*

[The following memoirs relate to *Apidae*, viz. :—ALFKEN (15-19, 21), ASHMEAD (40), BUTTEL-REEPEN (212, 213), BUYSSEN (216, 218), CAMERON (223), COCKERELL (271-277, 279), DUCKE (351), FREY-GESSNER (448), FRIESE (449-458), GALE (483), KIRBY (723, 724), KOSCHEVNIKOV (759), KRIECHBAUMER (783), LIE-PETTERSEN (823), LUDWIG (837), MICHAELIS (908), PERKINS (991), ROBERTSON (1123), SAUNDERS (1148), SCHMIEDEKNECHT (1155), STOYEL (1286), TITUS (1324), WEISMANN (1404).]

Visits of bees to flowers in Europe and N. America, LUDWIG (837).

Male copulatory organs of *Apis mellifica*, MICHAELIS (908).

Agapostemon ; characters of species found in Colorado, TITUS, pp. 303, 304, Canad. Ent. xxxii.

A. semimelleus, chapadensis, Brazil, COCKERELL, p. 376, P. Ac. Philad. 1900, n. spp.

Andrena nyctemera, habits, habitat, PIGEOT, p. 186, Bull. Soc. ent. France 1900 ; *A. apacheorum* var., COCKERELL, p. 403, Ann. Nat. Hist. v.

A. porterae, p. 401, *xanthigera*, p. 402, *albovirgata*, p. 403, *segregans*, p. 404, *nitidior*, p. 406, *semirufa*, p. 407, New Mexico, COCKERELL, Ann. Nat. Hist. v ; *A. sapellonia*, New Mexico, COCKERELL, p. 19, t. c. : n. spp.

Anthidium ; subg. n. *Dianthidium* q. v.

A. porterae, New Mexico, COCKERELL, p. 411, Ann. Nat. Hist. v, n. sp.

Anthophora bombooides var. n. *neomexicana*, COCKERELL, p. 408, t. c.

A. porterae, New Mexico, COCKERELL, p. 407, t. c. n. sp.

Anthophorula Cock. merged in *Exomalopsis*, FRIESE, p. 247, Ann. Hofmus. Wien xiv.

Anthrena nigriceps and allies, characters, ALFKEN, pp. 3-7, Ent. Nachr. xxvi ; *A. compta* ♂, SCHMIEDEKNECHT, p. 228, Termes. Fuzetek xxvii.

A. bremensis, Germany, ALFKEN, p. 6, Ent. Nachr. xxvi ; *A. berenice*, p. 220, *isis*, *arsinoë*, p. 221, *argyreofasciata*, p. 222, *marsæ*, p. 223, *kamarti*, p. 224, *dido*, p. 225, *tunetana*, p. 226, *smaragdina*, p. 227,

- brynicola*, p. 228, N. Africa, SCHMIEDEKNECHT, Termes. Fuzetek xxiii; *A. consimilis*, p. 177, *knuthi*, p. 178, *japonica*, p. 179, Japan, ALFKEN, Ent. Nachr. xxvi : n. spp.
- Augochlora vesta* var. n. *cupreola*, p. 363, *A. calypso* subsp. n. *cupreotincta, eucalyptae*, p. 364, *A. titania* Sm. referred to *Corynura*, p. 375, COCKERELL, P. Ac. Philad. 1900.
- A. cyanoviridis, clariventris*, St. Vincent, ASHMEAD, p. 217, Tr. ent. Soc. London 1900; *A. spinula*, p. 357, *polychroa, smithiana*, p. 358, *heterochroa*, p. 359, *goeldii, wallacei*, p. 360, *chapada*, p. 361, *brasiliana*, p. 362, *monochroa*, p. 364 with subsp. *moreira*, p. 365, *janeirensis*, p. 366, *mulleri*, p. 367, *callichroa*, p. 368, *iberingi, curvifrons*, p. 369, *batesi, belti*, p. 370, *foxiana*, p. 371, with var. *perimedae*, p. 372, Brazil, COCKERELL, P. Ac. Philad. 1900 : n. spp.
- Bicornelia* n. g. near *Caupolicana*, p. 239, for *B. serrata*, n. sp., Mexico, p. 240, FRIESE, Ann. Hofmus. Wien xiv.
- Bombomelecta larvae*, New Mexico, COCKERELL, p. 361, Canad. Ent. xxxii, n. sp.
- Bombus soroensis*, variation, ALFKEN, pp. 184–190, Ent. Nachr. xxvi ; *B. proximus* and var. *howardi*, COCKERELL, p. 401, Ann. Nat. Hist. v ; *B. and Psithyrus* in N. Norway, LIE-PETTERSEN (823).
- Calliopsis coloradensis coloratipes* = (*C. flavifrons coloratipes*), ♀ described, COCKERELL, p. 64, Entomologist xxxiii.
- Camptopœum handlirschi*, Biskra, FRIESE, p. 86, Ent. Nachr. xxvi, n. sp.
- Caupolicana* = (*Megaciliaesa*), COCKERELL, p. 570, Ent. News Philad. xi.
- C. peruviana*, Peru, FRIESE, p. 180, Ent. Nachr. xxvi ; *C. bicolor*, p. 242, *adusta*, p. 243, Chili, FRIESE, Ann. Hofmus. Wien xiv : n. spp.
- Centris atra* ♂, id. t. c., p. 118.
- Centris atra*, Brazil, *clypeata, sericea*, Mexico, *lateritia*, p. 41, *mocsaryi, scopipes, rufipes, bucephala*, p. 42, *lutea, femoralis, smithii*, p. 43, S. America, *birkmanni, limbata*, Texas, *breviceps*, Amazonas, *labrosa*, Centr. America, p. 44, *proxima, nigripes, tricolor, klugii*, p. 45, *inermis, flavothoracica*, p. 46, *pseudoephippia, ruficauda, intermixta, caelebs, flavohirta, nigrofasciata*, p. 47, *niveofasciata, minor*, p. 48, S. America, FRIESE, Termes. Fuzetek xxiii ; *C. weilenmanni, pauloensis*, p. 117, *horvathi*, p. 118, FRIESE, t. c. : n. spp.
- Ceratina bifida*, Asia Minor, FRIESE, p. 86, Ent. Nachr. xxvi ; *C. madecassa, Nossi-Bé*, FRIESE, p. 262, Abb. Senckenb. Ges. xxvi ; *C. nigrita*, St. Vincent, ASHMEAD, p. 212, Tr. ent. Soc. London 1900 : n. spp.
- Chrysanthoda trochanterica*, Brazil, FRIESE, p. 66, Ent. Nachr. xxvi, n. sp.
- Colioxys* ; characters of New Mexican, COCKERELL, pp. 297–301, Canad. Ent. xxxii ; *C. octodentata*, host is *Megachile mendica*, FOX, Ent. News Philad. xi.
- C. (lucrosa var. ?) porterae*, p. 298, *apacheorum*, p. 299, *grindeliae*, p. 300, *ribis*, p. 301, New Mexico, COCKERELL, Canad. Ent. xxxii : n. spp.
- Colletes* ; deep burrows, SMITH, p. 208, J. N. York Ent. Soc. viii ; *C. propoides*, ♀, COCKERELL, p. 244, Entomologist xxxiii.
- C. graeffei*, Centr. Europe, p. 74, *seitzii*, Yokohama, p. 76, ALFKEN, Ent. Nachr. xxvi ; *C. inconspicua*, Abd-el-Kuri, KIRBY, p. 23, Bull. Liverp. Mus. iii ; *C. nigrifrons*, Colorado, TITUS, p. 304, Canad. Ent. xxxii ; *C. algarobae*, New Mexico, COCKERELL, p. 244, Entomologist xxxiii ; *C. nitidicollis*, p. 182, *rugicollis*, p. 183, *murinus*, p. 184, S. America, FRIESE, Ent. Nachr. xxvi : n. spp.
- Crocisa forbesii, uniformis*, Sokotra, KIRBY, p. 21, Bull. Liverp. Mus. iii, n. spp.
- Dasyopoda schlettereri*, S. E. Europe, FRIESE, p. 87, Ent. Nachr. xxvi, n. sp.
- Dianthidium* subg. n. of *Anthidium* for *A. curvatum* Sm. and a N. American species, COCKERELL, p. 4

- Dufourea alboclypeata*, Egypt, FRIESE, p. 86, Ent. Nachr. xxvi; *D. subcyanea*, St. Vincent, ASHMEAD, p. 215, Tr. ent. Soc. London 1900 : n. spp.
- Epeolus occidentalis* var. n. *segregatus*, p. 361, *E. remigatus* var. *martini*, p. 362, COCKERELL, Canad. Ent. xxxii.
- E. rufotegularis* Grenada, ASHMEAD, p. 211, Tr. ent. Soc. London 1900, n. sp.
- Epicharis maculata* var. n. *nigroclypeata*, *grandior*, FRIESE, p. 40, Termes Fuzetek xxiii.
- E. cockerelli*, Brazil, FRIESE, p. 119, t. c.; *E. albifacies*, *lindigii*, *schröttkyi*, p. 39, *obscura*, (♂, p. 119), *theringii*, *metatarsalis*, p. 40, S. America, FRIESE, t. c. n. spp.
- Eucera difficilis*, habits, ALFKEN, Ent. Nachr. xxvi, p. 157.
- Euglossa*: remarks on 6 species as supplement to the 1899 paper, FRIESE, pp. 121, 122, Termes Fuzetek xxiii.
- Exomalopsis*, monograph, FRIESE, pp. 247–270, Ann. Hofmus. Wien xiv.
- E. aureooserica*, Brazil, p. 253, *collaris*, *tomentosa*, p. 254, *texana*, p. 264, Texas, *E. chilensis*, Chili, *E. latitarsis*, p. 266, *nigripes*, *chalybea*, p. 267, Brazil, *serrata*, Mexico, p. 270, FRIESE, t. c. n. spp.
- Fidelia* n. g. near *Podalirius* ?, p. 244, for *F. paradoxa*, n. sp., S. Africa, p. 245, FRIESE, t. c.
- Halictus aquila*, ♂, COCKERELL, p. 415, Ann. Nat. Hist. v.
- H. flavoritatus*, Sokotra, KIRBY, p. 20, Bull. Liverp. Mus. iii; *H. decemmaculatus*, Nossi-Bé, FRIESE, p. 265, Abh. Senckenb. Ges. xxvi; *H. andrewsi*, fig. 8, binghami, p. 9, pl. xiv, KIRBY, p. 86, Monogr. Christmas Island; *H. cyaneus*, p. 219, *plumbeus*, *auratus*, *sancti-vincenti*, p. 220, St. Vincent, ASHMEAD, Tr. ent. Soc. London 1900; *H. huttoni*, New Zealand, CAMERON, p. 17, Tr. N. Zealand Inst. xvii : n. spp.
- Hylaeosoma longiceps*, St Vincent, ASHMEAD, p. 215, Tr. ent. Soc. 1900, n. sp.
- Hypomacroterea callops* var. n. *persimilis*, COCKERELL, p. 64, Entomologist xxvii.
- Koptorthosoma* sp. from New Britain, SHARP, p. 388, Willey Results iv.
- Lithurgus gibbosus*, L. compressus Sm. is the ♂, COCKERELL, p. 487, Amer. Natural. xxxiv.
- Megachile*; the New Mexican species, revised, COCKERELL, pp. 7–18, Ann. Nat. Hist. vi.
- M. punctatissima*, p. 20, *paucipunctulata*, p. 21, Sokotra, KIRBY, Bull. Liverp. Mus. iii; *M. sikorae*, Madagascar, VOELTZKOW, p. 261, Abh. Senckenb. Ges. xxvi; *M. rotundipennis*, p. 87, *nivescens*, p. 88, Christmas Is., KIRBY, Monogr. Christmas Island; *M. newberryae*, New Mexico, COCKERELL, p. 244, Entomologist xxvii; *M. sapellonis*, p. 7, *monardarum*, p. 11, *soledadensis*, p. 12, *cleomis*, p. 13, *prosopidis*, p. 16, *chilopsisidis*, *populi*, p. 17, *vallorum*, *heterodonta*, p. 18, New Mexico, COCKERELL, Ann. Nat. Hist. vi; *M. tridentata*, p. 213, *minima*, p. 214, St. Vincent, ASHMEAD, Tr. ent. Soc. London 1900 : n. spp.
- Megacilissa tomentosa* var. n. *steinheili*, FRIESE, p. 244, Ann. Hofmus. Wien xiv.
- M. magrettii*, Venezuela, FRIESE, p. 243, Ann. Hofmus. Wien xiv; *M. (Ptiloglossa) virgili*, p. 180, *tarsata*, p. 181, S. America, FRIESE, Ent. Nachr. xxvi : n. spp.
- Megalopta* (*Megaloptidia* subg. n.) *contradicta*, Santarem, COCKERELL, p. 373, P. Ac. Philad. 1900, n. sp.
- Megaloptidia* subg. n. cf. *Megalopta*.
- Melipona nigripes*, Guatemala, *lunulata rufescens*, *nigrescens*, p. 381, *eburnea*, *rufipes*, *flavolineata*, *fuscipes*, *peruviana*, p. 382, *carulea*, p. 394, S. America, FRIESE, Termes Fuzetek xxiii, n. spp.
- Melissa imperialis*, St. Vincent, ASHMEAD, p. 211, Tr. ent. Soc. London

- 1900; *M. diabolica*, p. 65, *maculata*, *cerulea*, *violacea*, *viridis*, p. 66, Brazil, FRIESE, Ent. Nachr. xxvi : n. spp.
- Melisodes trifasciatella*, St. Vincent, ASHMEAD, p. 210, Tr. ent. Soc. London 1900, n. sp.
- Melitta hispanica*, Barcelona, *albofasciata*, Turkestan, *tomentosa*, Fiume, p. 85, FRIESE, Ent. Nachr. xxvi, n. spp.
- Nomada atrata* Sm. = (*brevicornis* Schmied.), SAUNDERS, p. 204, Ent. Mag. xxvi.
- N. illinoensis*, *parva*, Illinois, ROBERTSON, p. 294, Canad. Ent. xxxii ; *N. xanthophila*, New Mexico, COCKERELL, p. 415, Ann. Nat. Hist. v : n. spp.
- Nomia viridilimbata* ♂ ♀, BUYSSON, p. 178, Ann. Soc. ent. France lxix.
- Nomia saussurei*, Nossi-Bé, FRIESE, p. 263, Abh. Senckenb. Ges. xxvi : n. sp.
- Osmia*; monograph of palæarctic, DUCKE, Ber. Ver. Innsbruck xxv ; *O. parietina* Curt. = (*angustula* Zett.), characters, SAUNDERS, p. 51, Ent. Mag. xxxvi ; *O. lignaria* var., p. 409, *O. nigrifrons* var. *n. subaustralis*, p. 410, COCKERELL, Ann. Nat. Hist. v ; *O. longispina* sexes, nesting, pl. x, p. 666, R. DU BUYSSEN, Ann. Soc. ent. France lxviii.
- O. purpurata*, p. 134, *epeoliformis*, p. 145, Algeria, *magrettii*, Milan, p. 205, *leucopyga*, Algeria, p. 223, *saxicola*, Triest, p. 226, *frieseana*, p. 249, *alfkenii*, p. 263, Algeria, *kohlii*, Sicily, p. 271, DUCKE, Ber. Ver. Innsbruck xxv ; *O. puleata*, Tunis, BÜYSSON, p. 668, Ann. Soc. ent. France lxviii ; *O. (Melanosmia) ribifloris*, New Mexico, COCKERELL, p. 410, Ann. Nat. Hist. v : n. spp.
- Oxaea rufa*, Brazil, FRIESE, p. 244, Ann. Hofmus. Wien xiv, n. sp.
- Pachyosmia* subg. n. of *Osmia*, for *emarginata* etc., DUCKE, p. 18, Ber. Ver. Innsbruck xxv.
- Panurginus porterae*, New Mexico, COCKERELL, p. 364, Canad. Ent. xxxii, n. sp.
- Perdita buccarialis*, p. 61, *melina*, *heterothecæ*, p. 62, Arizona, *heliotropi*, Chihuahua, p. 63, COCKERELL, Entomologist xxxii, n. spp.
- Podalirius fulvilectus*, *antennatus*, Sokotra, p. 22, *pyramidalis*, Abd-el-Kuri, p. 23, KIRBY, Bull. Liverp. Mus. iii, n. spp.
- Prosopis*: the species of N. W. Germany, table of characters and remarks, ALFKEN (21).
- P. palustris*, England, PERKINS, p. 49, Ent. Mag. xxxvi ; *P. helvetica*, p. 228, *tristis*, p. 230, Switzerland, FREY-GEßNER, Mt. Schweiz. ent. Ges. x : n. spp.
- Protosmia* subg. n. of *Osmia*, for *O. glutinosa* etc., DUCKE, p. 12, Ber. Ver. Innsbruck xxv.
- Ptilothrix nigrita*, *P. ? similia*, Brazil, FRIESE, p. 272, Ann. Hofmus. Wien xiv, n. spp.
- Rathymus michaelis*, *armatus*, S. America, FRIESE, p. 65, Ent. Nachr. xxvi, n. spp.
- Rhopites foveolatus*, Greece, FRIESE, p. 85, t. c. n. sp.
- Sphecodes fortior*, relations with *Anthidium paroselæ*, NEWBERRY, p. 94, Psyche ix.
- S. nigritus*, *solitarius*, p. 221, *thoracicus*, p. 222, St. Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.
- Tetralonia duplofasciata*, Colombia, KRIECHBAUMER, p. 106, pl. i, fig. 6, Berlin. ent. Zeitschr. xlvi, n. sp.
- Tetrapedia*; monograph, FRIESE, pp. 274, 303, Ann. Hofmus. Wien xiv.
- T. rugulosa*, *peckoltii*, p. 282, *curvitaris*, *amplitaris*, p. 283, *dipetata*, *pyramidalis*, p. 285, *bunchosiae*, p. 286, *glaberrima*, *nigripes*, p. 287, *serraticornis*, p. 288, *picta*, p. 290, *mulleri*, *maculata* n. sp., *ventris*, p. 292, *piliventris*, p. 293, *goediana*, p. 294, *antennata*, p. 297, *ferruginea*, *globulosa*, p. 298.

- pennis*, p. 299, *elongata*, *klugi*, p. 300, *saussurei*, with varr. *grisescens* and *fuscoventris*, Mexico, p. 301, FRIESE, t. c. n. spp.
Thrausmus n. g. *Andrenides* parasitic, for *T. grandidieri* n. sp., Madagascar, BUYSSON, p. 177, Ann. Soc. ent. France lix.
Trigona sp., nest from Singapore, WATERHOUSE, p. v, P. ent. Soc. London 1900.
T. *voeltzkowi*, Madagascar, FRIESE, p. 260, Abh. Senckenb. Ges. xxvi; *T. tomentosa*, *conradti*, *langhofferi*, *lendliana*, *cameroenensis*, p. 383, *buschirii*, *hildebrandti*, *magretti*, Africa, *latipes*, Malacca, p. 384, *fuscipennis*, Guatemala, *lacteipennis*, *fulvohirta*, *helleri*, p. 385, *duckei*, *mulleri*, *schrottkyi*, S. America, *schulthessi*, Guatemala, p. 386, *nigri-facies*, *kohli*, *braueri*, *dallatorreana*, p. 387, *williana*, *latitarsis*, p. 388, *flaveola*, *obscura*, *rhumbleri*, *heidleri*, S. America, *hellwegeri*, Mexico, p. 389, *goettei*, *moscaryi*, *doederleini*, p. 390, *ziegleri*, *handlirschi*, *droryana*, *goeldiana*, p. 391, *saiqui*, *emerina*, S. America, *voeltzkovi*, Madagascar, p. 392, *alfkeni*, *heckeli*, *butteli*, *franki*, *graffei*, p. 393, *porto*, p. 394, S. America, FRIESE, Termes. Fuzetek xxiii; *T. nigrocyanea*, St. Vincent, ASHMEAD, p. 208, Tr. ent. Soc. London 1900; n. spp.
Xenoglossa patricia var. n. *angustior*, COCKERELL, p. 64, Entomologist xxxiii.
Xylocopa cantabrita ♂, ALFKEN, p. 77, Ent. Nachr. xxvi.
X. *rogenhoferi*, Persia, *wagneri*, China, FRIESE, p. 86, Ent. Nachr. xxvi; X. *tricuspidifera*, Peru, KRIECHBAUMER, p. 106, pl. i, fig. 7, Berlin. Ent. Zeitschr. xl : n. spp.

VESPIDÆ (incl. EUMENIDÆ).

[Cf. ASHMEAD (40, 41), BERG (99), CAMERON (222), KINCAID (712), KIRBY (723), KRIECHBAUMER (783), RUDOW (1142), SAUSSURE (1149), SCHMIEDEKNECHT (1156).]

- Biology of Madagascar wasps; peculiarity of colour, and of forms of nests, SAUSSURE (1149).
The nests of wasps, RUDOW (1142).
Belonogaster, nests, SAUSSURE, p. 206, Abh. Senckenb. Ges. xxvi.
B. apicalis, *bicolor*, p. 208, *pomicolor*, *ornatus*, p. 209, *malagassus*, p. 210, Madagascar, SAUSSURE, t. c. n. spp.
Eumenes granti, Sokotra, KIRBY, p. 18, Bull. Liverp. Mus. iii; *E. sakalavus*, Madagascar, SAUSSURE, p. 235, Abh. Senckenb. Ges. xxvi : n. spp.
Icaria, nests, SAUSSURE, p. 212, Abh. Senckenb. Ges. xxvi; *I. ferruginea* ♂, CAMERON, p. 495, Ann. Nat. Hist. vi.
I. grossepunctata, Sokotra, p. 20, *aterrima*, Abd-el-Kuri, p. 23, KIRBY, Bull. Liverp. Mus. iii; *I. prasina*, *regina*, p. 220, *pulchella*, p. 223, *fraterna*, *interjecta*, p. 225, *ducalis*, p. 226, *sakalava*, p. 228, *venustula*, p. 231, Madagascar, SAUSSURE, t. c.; *I. quadrimaculata*, *ornaticeps*, p. 496, *rufocollaris*, p. 497, *nigroplagiata*, p. 498, *carinata*, p. 499, *wroughtoni*, p. 500, *fuscipennis*, p. 501, *tinctipennis*, p. 503, *fulvinervia*, p. 504, India, CAMERON, Ann. Nat. Hist. vi : n. spp.
Labus armatus, Khasia Hills, CAMERON, p. 536, t. c. n. sp.
Monobia insularis, Grenadines, ASHMEAD, p. 233, Tr. ent. Soc. London 1900, n. sp.
Montezuma bisulcata, Khasia Hills, CAMERON, p. 535, Ann. Nat. Hist. vi, n. sp.
Odynerus labiatius, *vespiformis*, characters, habitat, BERG, pp. 237-240, Comun. Mus. Buenos Aires i; *O. andeanus* ♂, BUYSSON, p. 178, Ann. Soc. ent. France lix.

O. (Microdynerus) oeiris, p. 229, *O. (Hoplomerus) hamilcar*, p. 230, *hasdrubal*, p. 231, N. Africa, SCHMIEDEKNECHT, Termes. Fuzetek xxiii; *O. malagassus*, p. 237, *hova*, p. 238, Madagascar, SAUSSURE, Abh. Senckenb. Ges. xxvi; *O. hindostanus*, p. 504, *antonii*, p. 505, India, CAMERON, Ann. Nat. Hist. vi; *O. sancti-vicenti*, St Vincent, p. 233, *grenadensis*, Grenada, p. 234, ASHMEAD, Tr. ent. Soc. London 1900; *O. magdalena*, Colombia, KRIECHBAUMER, p. 105, pl. i, fig. 8, Berlin. ent. Zeitschr. xlv : n. spp.

Polistes, aberrant oviposition, SHARP, p. 388, pl. xxxv, fig. 14, Willey Results iv.

P. rothneyi, p. 410, *rufolineatus*, p. 411, *rugifrons*, p. 412, *khasianus* ♀, *nigritarsis*, p. 413, *ephippium*, *khasianus* ♂, p. 415, *wattii*, p. 416, *japonicus*, p. 417, *erythrocerus*, p. 418, Japan, CAMERON, Ann. Nat. Hist. vi; *P. sikorae*, Madagascar, SAUSSURE, p. 233, Abh. Senckenb. Ges. xxvi : n. spp.

Pterochilus pharaonum, Egypt, SCHMIEDEKNECHT, p. 232, Termes. Fuzetek xxiii, n. sp.

Rhynchium argentatum, characters, synonymy, *R. carbonarium* referred to *Pararhynchium*, CAMERON, p. 532, Ann. Nat. Hist. vi.

R. versicolor, Sokotra, KIRBY, p. 19, Bull. Liverp. Mus. iii; *R. khasianum*, p. 530, *clypeatum*, p. 531, *lugubrinum*, p. 532, *rugolatum*, p. 533, India, CAMERON, Ann. Nat. Hist. vi : n. spp.

Vespa vulgaris, activity in nests in January and February, MOFFAT, Irish Natural ix, p. 47, BARRINGTON, t. c. p. 108.

Zethus haemorrhoidalis, Colombia, KRIECHBAUMER, p. 104, pl. 1, fig. 5, Berlin. ent. Zeitschr. xlv, n. sp.

HYMENOPTERA FOSSORIA (or SPHEGOIDEA).

[Cf. ADLERZ (11), ANDRE (27, 28), ASHMEAD (40, 41), BINGHAM (121), BOUVIER (165, 166), CAMERON (220, 221), COCKERELL (279), FERTON (418), FOX (442), FRIESE (459), HANDLIRSCH (556, 557, 558), KINCAID (712, 713), KIRBY (723), KOHL (741, 742), KRIECHBAUMER (783), MANTERO (851), MARCHAL (853), MORICE (926), NIELSEN (943), PECKHAM & PECKHAM (982), SCHMIEDEKNECHT (1156), SHARP (1208).]

Habita, ADLERZ (11), BOUVIER (165, 166), FERTON (418), MARCHAL (853), NIELSEN (943) and The instinct of *Sphex*, PECKHAM & PECKHAM (982).

Agenia diana, Khasia, CAMERON, p. 19, Ann. Nat. Hist. v, n. sp.

Alyson picteti ♀, SCHMIEDEKNECHT, p. 233, Termes. Fuzetek xxiii.

Ammophila rugicollis and *rubiginosa* are ♂ ♀ of one species, MORICE, p. 67, Ann. Nat. Hist. v; *A. sabulosa*, habits, ADLERZ, pp. 163-170, Ent. Tidskr. xxi.

A. pacificensis, p. 67, *albotomentosa*, p. 69, *producticollis*, p. 70, Biskra, MORICE, Ann. Nat. Hist. v : *A. arabica*, Sokotra, KIRBY, p. 24, Bull. Liverp. Mus. iii : n. spp.

Ampulex pilosa, p. 37, *pulchreipes*, p. 38, E. India, CAMERON, Ann. Nat. Hist. v, n. spp.

Apterogynni klugi, Algeria, ANDRÉ, p. 69, Spec. Hym. viii, n. sp.

Arachnospila septentrionalis, Alaska, KINCAID, p. 509, P. Washington Ac. ii, n. sp.

Astata boope, habits, ADLERZ, pp. 187-191, Ent. Tidskr. xxi.

Belomicrodes n. g., p. 312, near *Oxybelus*, for *B. schmiedeknechti* n. sp., Tunis, p. 314, KOHL, Ann. Hofmus. Wien xiv.

Belomicrus antennalis, Sarepta, *femoralis*, Transcaspian, KOHL, p. 2 t. c. n. spp.

- Bembex*, instinct and habit of European, FERTON (418); *B. labiatus*, habits, BOUVIER, p. 874, C.R. Soc. Biol. lii.
- B. dissimilis*, Abd-el-Kuri, KIRBY, p. 22, Bull. Liverp. Mus. iii, n. sp.
- Cænolarra* n. g., p. 28, near *Notogonia*, for *C. appendiculata* n. sp., Barrack-pore, p. 29, CAMERON, Ann. Nat. Hist. v.
- Calopompilus* n. g. type *P. maculipennis* Smith, ASHMEAD, p. 188, Canad. Ent. xxxii.
- Campsomeris socotrana*, Sokotra, KIRBY, p. 14, Bull. Liverp. Mus. iii, n. sp.
- Cemonus lethifer, unicolor*, habits, NIELSEN, pp. 270–272, Vid. Medd. 1900.
- Ceratophorus morio*, habits, burrows, NIELSEN, p. 272, cut, t. c.
- Cerceris*, habits of various Swedish species, ADLERZ, pp. 179–187, Ent. Tidskr. xxi; *C. truncatula, labiata*, food-habits, NIELSEN, p. 267, Vid. Medd. 1900.
- C. lobata*, Sokotra, KIRBY, p. 18, Bull. Liverp. Mus. iii; *C. nigra*, St Vincent, ASHMEAD, p. 227, Tr. ent. Soc. London 1900 : n. spp.
- Ceropales maculata*, note on habits, ADLERZ, p. 195, Ent. Tidskr. xxi.
- C. parva*, Ceylon, CAMERON, p. 20, Ann. Nat. Hist. v, n. sp.
- Clytochrysis chrysostomus*, habits, burrows, NIELSEN, pp. 255–259, cuts, Vidd. Medd. 1900.
- Calocrabro leucostomus*, habits, burrows, NIELSEN, p. 259, cut, t. c.
- Cælocrabro cloëvorax*, Denmark, NIELSEN, p. 260, t. c. n. sp.
- Crabro 5-signatus*, capturing ants, BIGNELL, p. 264, Ent. Mag. xxxvi.
- C. (Crossocerus) emarginatus*, Mongolia, p. 307, *C. (Rhopalum) austriacus*, Lower Austria, p. 308, *C. (Lindenius) hamilecar*, p. 310, *spilostomus*, p. 311, *C. (Entomognathus) euryops*, p. 312, Tunis, KOHL, Ann. Hofmus. Wien xiv; *C. foxii*, p. 356, *angelicus*, p. 358, Washington, KINCAID, Ent. News Philad. xi : n. spp.
- Cratolarra* n. g., near *Tachytes*, for *C. femorata* n. sp., Khasia, CAMERON, p. 34, Ann. Nat. Hist. v.
- Crossocerus palmarius*, habits, NIELSEN, Vid. Medd. 1900, p. 262.
- Diodontus tristis, minutus*, habits, NIELSEN, p. 275, t. c.
- Eidopompilus* n. g. *Pompilidae*, p. 305, for *E. braunsi* n. sp., S. Africa, p. 306, pl. xix, KOHL, Ann. Hofmus. Wien xiv.
- Eidopompilus?* *premnopterus*, p. 142, pl. viii, fig. I, *E. krugeri*, p. 143, *rusticorum*, p. 145, *juberti*, p. 146, S. Africa, KOHL, op. cit. xv, n. spp.
- Elis annulata* var. n. *ferrugineipes*, *E. iris* var. n. *loriai*, MANTERO, p. 591, Ann. Mus. Genova xl.
- Ephutomma* (= *Sphinctomutilla* André i. l. and on plates ii and vii) *syriaca*, Palestine, p. 140, *biskrensis*, Algeria, p. 143, ANDRÉ, Spec. Hym. viii, n. spp.
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- T. pygmaeum*, India, CAMERON, p. 79, Mem. Manchester Soc. xliv, n. sp.

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- Tetragonochora brasiliensis*, Amazona, SZÉPLIGETI, p. 288, Termes. Fuzetek xxiii, n. sp.
- Tricyphus vulpinus*, N. America, SZÉPLIGETI, p. 288, t. c. n. sp.
- Trigonospilus* n. g. *Opinae*, type *T. hopkinsi* Ashm., not described, ASHMEAD, p. 134, P. U. S. Mus. xxiii.
- Trissarthrum* n. g. type *Dimeris maculipennis* Ashm., not described, ASHMEAD, p. 148, t. c.
- Tropidobracon* n. g. type *Bracon gastroideæ* Ashm., ASHMEAD, p. 139, t. c.; *T. fuscitarsis*, Grenada, ASHMEAD, p. 296, Tr. ent. Soc. London 1900, n. sp.
- Urogaster balthazari*, Grenada, *nigriceps*, p. 284, *meridionalis*, St Vincent, *grenadensis*, Grenada, p. 285, *disputabilis*, *vulgaris*, p. 286, St Vincent, *solitarius*, Grenada, *leucopus*, St Vincent, p. 287, *xanthopus*, *imitator*, p. 288, *leucostigmus*, *aciculatus*, Grenada, p. 289, *rhomboidalis*, St Vincent, p. 290, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.
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- Zamegaspilus* n. g. *Exothecini*, type *Z. hopkinsi* Ashm., not described, ASHMEAD, p. 141, t. c.
- Zelomorpha* n. g. *Microdini*, type *Z. arizonensis* Ashm., not described, ASHMEAD, p. 129, t. c.

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- Schlettererius* n. g. type *Stephanus cinctipes* Cresson, ASHMEAD, p. 150, P. U. S. Mus. xxiii.
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Adelencyrtus n. g. type *Encyrtus chionaspidis* How., ASHMEAD, p. 401, P. U. S. Mus. xxii.

Enasius chapadae, Brazil, ASHMEAD, p. 371, t. c. n. sp.

Agamerion caeruleiventris, Australia, ASHMEAD, p. 340, P. Linn. Soc. N. S. Wales xxv, n. sp.

Anagyrus pallidipes, N. America, ASHMEAD, p. 354, P. U. S. Mus. xxii, n. sp.

Anastatus alboclavus, p. 261, *aurifrons*, p. 262, St Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.

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Centrobia odonatae, N. America, ASHMEAD, p. 616, Ent. News Philad. xi, n. sp.

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Chrysoplatycerus howardii, Mexico, ASHMEAD, p. 405, t. c. n. sp.

Coccidencyrtus n. g. for *Encyrtus ensifer* How., ASHMEAD, p. 383, t. c.

Coccobius diaspidis, N. America, ASHMEAD, p. 408, t. c. n. sp.

Coccophoconus n. g. *Encyrtinae*, for *C. dactylopili* n. sp., Australia, ASHMEAD, p. 375, t. c.

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- Euchrysis busckii*, Porto Rico, ASHMEAD, p. 256, Tr. ent. Soc. London 1900, n. sp.
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- Euplectrus australiensis*, Australia, ASHMEAD, p. 347, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Eurytoma australiensis*, p. 335, *eucalypti*, p. 336, *binotata*, p. 337, Australia, ASHMEAD, t. c. n. spp.
- Habroleptopteryx* n. g., type *Psilophrys pulchripennis* Ashm., ASHMEAD, p. 359, P. U. S. Mus. xxii.
- Halticella* sp., Java, ZEHNTNER, p. 28, pl. ii, figg. 24, 25, Plantenluizen x.
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- Hemencyrtus* n. g. *Encyrtinae*, p. 374, for *H. herbertii* n. sp., Brazil, p. 375, ASHMEAD, t. c.
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- Metapelma cubensis*, Cuba, ASHMEAD, p. 257, Tr. ent. Soc. London 1900, n. sp.
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- Ooencyrtus* n. g. type *Encyrtus anasæ* Ashm., ASHMEAD, p. 381, t. c.
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- Psyllæphagus* n. g. type *Encyrtus pachypsylæ* How., ASHMEAD, p. 382, t. c.
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- Sycophila bicolor*, p. 252, *incerta*, p. 253, St Vincent, ASHMEAD, Tr. ent. Soc. London 1900, n. spp.
- Syrphophagus* n. g. type *Encyrtus mesograpta* Ashm., ASHMEAD, p. 397, P. U. S. Mus. xxii.
- Systole koebelei*, Australia, ASHMEAD, p. 335, P. Linn. Soc. N. S. Wales xxv, n. sp.
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- Tetrastichus* sp., Java, ZEHNTNER, p. 26, pl. ii, figg. 26, 27, Plantenluizen x.
- T. polynema*, N. America, from eggs of *Odonata*, ASHMEAD, p. 616, Ent. News Philad. xi; *T. flavus*, Grenada, ASHMEAD, p. 264, Tr. ent. Soc. London 1900 : n. spp.
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- Torymus eucalypti*, Australia, ASHMEAD, p. 331, t. c. n. sp.
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- Disogmus canadensis*, Canada, HARRINGTON, p. 193, Tr. R. Soc. Canada v, Sect. 4, n. sp.
- Eritissomerus pallipes*, Canada, HARRINGTON, p. 191, t. c. n. sp.
- Hadroneurus brevipennis*, Canada, HARRINGTON, p. 188, t. c. n. sp.
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[Cf. ASHMEAD (40), BUYSSON (219), CHAPMAN (239), DYAR (355), JAQUET (660), KINCAID (710), KONOW (756, 757), MACGILLIVRAY (845), MOCSÁRY (914), TURNER (1339), WEBSTER & MALLY (1390).]

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C. buruana, Buru, HOLLAND, p. 63, Nov. Zool. vii, n. sp.

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Cirrochroa aoris, pl. 364, *abnormis*, pl. 365, fig. 1, *olivacea*, fig. 2, *mithila*, pl. 366, *angira*, pl. 367, fig. 1, *surya*, fig. 2, *thais*, pl. 368, *lanka*, pl. 369, *nicobarica*, pl. 370, pp. 211–223, MOORE, Lep. ind. iv; *C. aoris*, gynandromorph, pl. dd, figg. 12, 13, p. 168, NICEVILLE, J. Bombay Soc. xiii.

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Cupha erymanthis, pl. 362, fig. 1, *maja* with larva and pupa, fig. 2, *placida*, pl. 363, fig. 1, MOORE, Lep. ind. iv.

C. andamanica, South Andamans, id. p. 208, pl. 363, fig. 2, t. c. n. sp.

Cymothoe aurivillii, figured, pl. v, figg. 5 and 8, Deutsche ent. Zeitschr. Lep. xii.

Cyrestis aza, Siam, STRECKER, p. 24, Suppl. iii, n. sp.

Cystineura floridana, Florida, id. l. c. n. sp.

- Doleschallia indica*, pl. 336, larva and pupa, fig. 2, *andamanica* n. n. for *polibete* Nicév. nec Cr., pl. 335, pp. 154–158, MOORE, Lep. ind. iv.
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- Eugonia j-album*, larva, variation of pupa, DURAND, p. 87, Psyche ix.
- Eulepis eudamippus whiteheadi*, Hainan, CROWLEY, p. 506, P. Zool. Soc. London 1900, n. sp.
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- Junonia cebrene*, pupa, p. 295, pl. xlvi, fig. 13, *clelia*, larva and pupa, fig. 14, FAWCETT, Tr. Zool. Soc. London xv; *J. alleni* n. n. for *ocyclea* Hb., *hubneri* n. n. for *Hamadryas decora evarete* ♂ Hübn., *oriana* n. n. for *evarete* ♀ Hübn., KIRBY, Hubner n. ed. p. 24; *J. anone hirta* to be called *lintingensis* Osbeck, FOX, p. 718, Science xii.
- Kirontia whiteheadi*, Hainan, CROWLEY, p. 506, pl. xxxv, fig. 4, P. Zool. Soc. London 1900, n. sp.
- Kallima hugelii*, pl. 337, *buckleyi*, pls. 338, 339, *iachus*, pls. 340, 341, *limborgii*, pl. 342, *philarchus*, pls. 343, 344, *horstfeldii* with larva and pupa, pls. 345, 346, *knyvetti*, pl. 347, fig. 1, *albofasciata*, fig. 2, pp. 162–175, MOORE, Lep. ind. iv.
- Melitea didyma* var. *turanica*, *M. asteroidea* var. *maculata*, STAUDINGER, p. 335, Deutsche ent. Zeitschr. Lep. xii; *M. didyma* var. n. *polaris*, GRUM-GRSHIMAILO, p. 459, Annaire Mus. St. Petersb. iv; *M. chalcedon* varr. n. *fusimacula*, *marianna*, BARNES, p. 42, Canad. Ent. xxxii; *M. didyma* varr., STICHEL, pp. 128–131, Berlin. ent. Zeitschr. xlvi; *M. didyma*, *parthenie* varr., OBERTHUR, p. 276, Bull. Soc. ent. France 1900, pl. i; *M. helvia* redescribed, HOLLAND, p. 385, Ent. News Philad. xi.
- M. approximata*, Texas, STRECKER, p. 23, Suppl. iii; *M. senrabii*, Texas, BARNEs, p. 43, Canad. Ent. xxxii : n. spp.
- Myscelia hypatia*, Amazons, STRECKER, p. 24, Suppl. iii, n. sp.
- Neptis prustini* and *nemeus*, synonymy, RIBBE, p. 408, Deutsche ent. Zeitschr. Lep. xii; *N. venilia novohannoverana*, PAGENSTECHER, p. 82, Zoologica xxvii; *N. seeldrayersi* ♀, AURIVILLIUS, p. 1042, Ofv. Ak. Forh. lvii.
- N. heliopolis* ♂, figg. 1, 2, ♀, fig. 3, GROSE-SMITH, Rhop. exot. Nymph. Neptis iv; *N. mortifacies*, figg. 1, 2, *cyanifera*, figg. 3, 4, *astrea*, figg. 5, 6, id. t. c. Neptis v.
- N. polion*, Bouru, id. t. c. Neptis iv, p. 14, figg. 4–6; *N. neriphoides*, Buru, HOLLAND, p. 66, Nov. Zool. vii; *N. nerio*, Buru, NICÉVILLE, p. 167, pl. DD, fig. 11, J. Bombay Soc. xiii : n. spp.
- Penthemma mimetica*, Siam, LATHY, p. 213, Entomologist xxxiii, n. sp.
- P. lisarda*, pl. 333, *darlisa*, p. 334, *binghami*, pl. 335, pp. 150–154, MOORE, Lep. ind. iv.

- Phaedyma ampliata* ♂, pl. i, fig. 6, p. 86, PAGENSTECHER, Zoologica xxvii.
Phycodes ithra [said to be new name] for *Acea hera* Hübner nec Cr.,
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 Berlin, ent. Zeitschr. xlvi; *P. cardui* var. n. *minor*, CANNAVIELLO,
 p. 19, Miscell. ent. viii; *P. huntera* var. n. *fulvia*, DODGE, p. 92,
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 p. 153, Ent. Mag. xxxvi; *V. antiopa*, ovipositing, WEEKS (1392).

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- Amathusia kuhni*, Celebes, p. 201, *staudingeri*, Borneo, p. 202, RÖBER, Ent.
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Nandoges hainana, Hainan, CROWLEY, p. 505, P. Zool. Soc. London 1900,
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Stichophthalma camadeva var. n. *nicevillei*, RÖBER, p. 203, Ent. Nachr.
 xxvi; *S. suffusa* var., SUFFERT, Berlin, ent. Zeitschr. xlvi, SB., p. 2.

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- Acrophalmia chionides*, Sula-Mangoli, NICÉVILLE, p. 163, pl. DD, fig. 7,
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Cœronympha: the N. American, SKINNER, pp. 299–309, pl. vii, Tr. Amer.
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 Soc. London 1900; *C. kodiak* var. n. *yukonensis*, HOLLAND, p. 386,
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 Tr. ent. Soc. London 1900; *E. fasciata* var. n. *semo*, GRUM-GRSHIMAILO,
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- Melanitis leda bouriiana* subsp. n., HOLLAND, p. 61, Nov. Zool. vii.
Mycalesis lamani, Congo, AURIVILLIUS, p. 1040, Ofv. Ak. Forh. lvii; *M. valeria*, New Guinea, GROSE-SMITH, p. 88, Nov. Zool. vii : n. spp.
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Pararge mæra var., FUCHS, p. 35, Jahrb. Nassau. Ver. liii.
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- Elymnias saueri* ♀, description and figure, NICÉVILLE, p. 164, pl. DD, fig. 8, J. Bombay Soc. xiii.
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- The Androconia of numerous *Lycæna* (110 spp.) described and figured and phylogeny discussed, KÖHLER (743).
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Arrhopala comica, Burma, NICÉVILLE, p. 170, pl. EE, fig. 18, J. Bombay Soc. xiii ; *A. carolina, buruensis*, Buru, HOLLAND, p. 78, Nov. Zool. vii : n. spp.
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- A. bambana*, E. Africa, GROSE-SMITH, Rhop. exot. iii, Lycaenidae (African), pl. xxvi, figg. 10, 11, p. 123, n. sp.
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Cyaniris; list of species, BUTLER, Ann. Nat. Hist. v, pp. 441–451; *C. ladon* Cr. = (*pseudargiolus* Boisd.), BUTLER, p. 91, Canad. Ent. xxxii; *C. ladon*, not to be used, ELWES, p. 116, t. c.
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L. sitalces, Madagascar, MABILLE, p. 723, Ann. Soc. ent. France lxviii; *L. donina*, Java and Celebes, SNELLEN, p. 262, Tijdschr. Ent. xlvi; *L. elaborata*, Queensland, LUCAS, p. 137, P. Soc. Queensland xv; *L. mela*, Colorado to Colombia, STRECKER, p. 20, Suppl. iii; *L. yukona*, Alaska, HOLLAND, p. 416, Ent. News Philad. xi : n. spp.

- Lycænesthes pegobates*, Buru, HOLLAND, p. 71, Nov. Zool. vii, n. sp.
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T. buruana, Buru, HOLLAND, p. 72, Nov. Zool. vii, n. sp.
Thecla; the type, BUTLER, p. 168, Entomologist xxxii; *T. melinus*, larva,
 COCKERELL, p. 578, Ent. News Philad. xi.
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- Plate of N. American *Hesperiidae*, with explanatory details, SKINNER,
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- Atrytone*; characters and composition, p. 490, the following figured, *delaware*, pl. xciv, figg. 4–6, *zabulon*, fig. 7, *rolla*, figg. 8–10, *vitellinus*, figg. 11–13, *helva*, figg. 25–29, *melane*, figg. 30–34, *niveolimbuz*, figg. 41–43, *inimica*, figg. 44–47, GODMAN, t. c.
- A. mella*, pl. xciv, figg. 14–16, p. 492, *mellona*, figg. 17–19, *myron*, figg. 20–24, p. 493, *gala*, figg. 35, 36, *monticola*, figg. 37–40, p. 495, Central America, GODMAN, t. c. n. spp.
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- Augiades*; characters, p. 484, Biol. Centr.-Amer. Rhopal. ii.
- A. heras*, pl. xciii, figg. 24–26, *hecale*, figg. 27–29, p. 484, GODMAN, t. c. n. spp.
- Butleria anomala*, pl. xcii, figg. 4–6, *eryonas*, figg. 9–11, p. 465, Biol. Centr.-Amer. Rhopal. ii.
- B. microsticta*, pl. xcii, figg. 1–3, p. 464, *pulchra*, figg. 7, 8, p. 465, *lalage*, figg. 12, 13, *octomaculata*, figg. 14, 15, *faula*, figg. 16, 17, p. 466, Centr. America, GODMAN, t. c. n. spp.
- Buzges* n. g. near *Atrytone*, for *B. idothea* n. sp., Costa Rica, p. 497, pl. xcv, figg. 1–5, GODMAN, t. c.
- Calpodes ethlius*, pl. xcv, figg. 45, 46, p. 507, GODMAN, t. c.
- Capila hainana*, Hainan, CROWLEY, p. 510, P. Zool. Soc. London 1900, n. sp.
- Carystus*, characters, p. 582, *C. claudianus*, pl. cii, figg. 1–4, *cynasta*, figg. 5, 6, *ebusa*, figg. 7–9, *marcus*, fig. 10, *aurelius*, figg. 11, 12, *diversus*, figg. 13, 14, *fantos*, fig. 15, *artona*, figg. 16–18, *coryna*, fig. 19, GODMAN, Biol. Centr.-Amer. Rhopal. ii.
- Casyapa beata*, larval habits, LILLIDGE, p. 136, P. Soc. Queensland xv.
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- Celenorrhinus opalinus*, E. Africa, BUTLER, p. 942, pl. lviii, figg. 10, 11, P. Zool. Soc. London 1900, n. sp.
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- Cydrus* n. g., p. 512, near *Prenes*, for *C. navolus* n. sp., Central America, p. 513, pl. xcvi, figg. 19–21, GODMAN, t. c.
- Doberes mexicanus*, cocoon described, BARRETT, p. 234, Canad. Ent. xxxii.
- Eagris plicata*, E. Africa, BUTLER, p. 941, pl. lviii, figg. 8, 9, P. Zool. Soc. London 1900, n. sp.
- Eudamus bolleyi*, Costa Rica, MABILLE, p. 230, Bull. Soc. ent. France 1900, n. sp.
- Euroto* n. g., p. 549, type *Pamphila compta* Butl. figured, pl. xcix, figg. 28–31, with *E. lyde*, figg. 32, 33, *micythus*, figg. 34, 35, *chlorocephala*, fig. 36, p. 551, *oagrus*, figg. 37–39, p. 552, n. spp., Central America, GODMAN, Biol. Centr.-Amer. Rhopal. ii.
- Eutychida* n. g., type *Hesperia physcella* Hew., p. 544, *E. cingulicornis* H.-S., pl. xcix, figg. 6–9, *midia* Hew., figg. 10–13, *achelous* Plötz, *umber* H.-S., p. 547, *assema* Mab., figg. 22, 23, *subsordidus* Mab., p. 548, and the following n. spp., *ochus*, figg. 14–16, *orthos*, figg. 17–19, p. 546, *lycortas*, figg. 20, 21, p. 547, Centr. America, GODMAN, t. c.

- Halotus* n. g. near *Amblyscirtes*, for *H. saxula* n. sp., Costa Rica, GODMAN, p. 505, t. c.
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- Heteropterus morpheus* var. n. *phantasos*, STICHEL, p. 137, Berlin. ent. Zeitschr. xlvi.
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- Lerema accius*, pl. xcix, fig. 44, p. 554, *bipunctata*, figg. 45–47, GODMAN, Biol. Centr.-Amer. Rhopal. ii.
- L. peneia*, Panama, id. t. c., p. 555, pl. xcix, figg. 48, 49, n. sp.
- Lerodea eufala*, pl. xcv, figg. 16–18, p. 500, GODMAN, t. c.
- L. dysaules*, Mexico, pl. xcv, figg. 19, 20, p. 500, GODMAN, t. c. n. sp.
- Mastor* n. g., p. 567 for *Hesperia bellus* Edw., pl. c, fig. 36, and *M. anubis*, p. 568, pl. c, figg. 32–35, *perigenes*, p. 569, pl. c, figg. 37, 38, n. spp., Mexico, GODMAN, t. c.
- Megistias* n. g., p. 571, type *Hesperia tripunctata* Latr., figured, pl. ci, figg. 1, 2, 3, with the following n. spp. from Central America, *M. jera*, p. 572, pl. ci, figg. 4, 5, *laudacius*, figg. 6, 7, *abarus*, fig. 8, p. 573, *fravis*, fig. 12, p. 574, *leucone*, figg. 19–21, p. 575; also to this genus *Cobalus teluta* H.-S. figured, pl. ci, figg. 13–15, *Pamphila epiberus* Mab. figg. 16–18; GODMAN, t. c.
- Methion* n. g., p. 563, for *M. melas* n. sp., Guatemala, p. 564, pl. c, figg. 22, 23, GODMAN, t. c.
- Metiscus* n. g., p. 562, for *M. atheas* n. sp., Centr. and S. America, p. 563, pl. c, figg. 20, 21, GODMAN, t. c.
- Metrocles* n. g., p. 558, for *M. leucogaster*, n. sp., Panama, p. 559, pl. c, figg. 8, 9, GODMAN, t. c.
- Metron* n. g., p. 557, for *P. chrysogaster* Butl., figured, pl. c, figg. 4–7, GODMAN, t. c.
- Mnasiceus* n. g., p. 567 for *Pamphila uniformis* Butl., figured, pl. c, figg. 30, 31, GODMAN, t. c.
- Mnasilus* n. g., p. 569, for *M. penicillatus* n. sp., Mexico, p. 570, pl. c, figg. 39–42, GODMAN, t. c.
- Mnasinous* n. g., p. 561, for *M. patage* n. sp., Centr. America, p. 562, pl. c, figg. 17–19, GODMAN, t. c.
- Mnathineus* n. g., p. 565, for *M. cephis* n. sp., Mexico, p. 566, pl. c, figg. 28, 27 and including *Pamphila simplicissima* H.-S., p. 568, pl. c, figg. 28, 29, GODMAN, t. c.
- Mœris* n. g., p. 556, type *Talides striga* Hübn., figured, pl. c, figg. 1, 2, with *M. hyagnis* n. sp., Mexico, p. 557, pl. c, fig. 3, GODMAN, t. c.
- Molo* n. g., p. 579, for *Hesperia herea* Hew., figured, pl. ci, figg. 34–37, GODMAN, t. c.
- Morys* n. g. for *Apaeustus valerius* Möschl., p. 541, figured, pl. xcvi, figg. 43–47, GODMAN, t. c.
- Mucia* n. g., p. 540, for *M. thyia* n. sp., Centr. and S. America, p. 541, pl. xcvi, figg. 42–44, GODMAN, t. c.
- Niconiades*, characters, p. 524, *N. xanthaphes*, pl. xcvi, figg. 21, 22, *cæso*, figg. 23–25, *merenda*, figg. 26, 27, *viridiceps*, figg. 28, 29, GODMAN, t. c.
- Ourisma* Scudd., characters, p. 469, *O. powesheik* figured (as *Paradopæa garita*), pl. xcii, figg. 23–25, *O. garita* (as *P. calega*), figg. 26–29, GODMAN, t. c.
- Ochloides snowi* sexes, p. 483, pl. xciii, figg. 19–23, GODMAN, t. c.
- Oeonus* n. g. near *Perimeles*, p. 539, for *Oe. pyste* n. sp., Mexico, p. 540, pl. xcvi, figg. 38–41, GODMAN, t. c.

- Onophas* n. g., p. 538, for *Pamphila columbaria* H.-S., figured, pl. xcixii, figg. 34–37, GODMAN, t. c.
- Oxynthes* n. g., p. 527, for *Goniloba corusca*, figured, pl. xcvi, figg. 30–33, GODMAN, t. c.
- Padraona epictetus*, p. 582, pl. ci, figg. 44–46, GODMAN, t. c.
- Pamphilinae*: the subfam. discussed, GODMAN, pp. 461–463, Biol. Centr.-Amer. Rhopal. ii. In the following pages of the work many American species are referred to other genera than those in which they have hitherto been placed. For complete information on this point reference must be made to the work. For synonymy a similar course must be pursued as the work does not indicate what is new and what merely repetitive.
- Pamphila dardaris*, pl. xcii, figg. 18–21, p. 467; *P. Edw.* to *Erinuys*, p. 478, ♂, pl. xciii, figg. 9, 10, GODMAN, t. c.
- P. daridæus*, Brazil, GODMAN, p. 467, t. c. n. sp.
- Papias* n. g., p. 559, type *Hesperia infuscata* Plötz, figured, pl. c, figg. 10, 11, with *P. dictys*, p. 560, pl. c, figg. 12, 13, *microœma*, figg. 14, 15, *phainis*, fig. 16, p. 561, n. spp., Centr. America, GODMAN, t. c.
- Paracarystus* n. g., p. 587, type *Cobalus hypargyra* H.-S., figured, pl. cii, figg. 20–23, GODMAN, t. c.
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- P. asilas*, Venezuela, GODMAN, p. 515, t. c. n. sp.
- Paratrytone* n. g., p. 487, for *P. rhexenor*, pl. xciii, figg. 41–43, *polyclea*, figg. 44, 45, Mexico, n. spp., p. 488, GODMAN, t. c.
- Parphorus* n. g., p. 576, for *Phlebodes storax* Mab., figured, pl. ci, figg. 22–25, GODMAN, t. c.
- Perimeles* n. g., p. 542, for *Hesperia remus* Fab., figured, pl. xcix, figg. 1–3, GODMAN, t. c.
- Phanis* n. g., p. 548, for *Hesperia justinianus* Latr., figured, pl. xcix, figg. 24–27, GODMAN, t. c.
- Phemiades propertius*, figured, pl. xcvi, fig. 34, p. 528, GODMAN, t. c.
- Pheræus* n. g., p. 578, type *Carystus epidius* Mab., figured, pl. ci, figg. 32, 33, GODMAN, t. c.
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- Phycanassa psaumis*, Mexico, GODMAN, p. 489, pl. xciv, figg. 2, 3, t. c. n. sp.
- Poanopsis* n. g., type *Pamphila puxillius*, p. 486, figured, pl. xciii, figg. 37–40, GODMAN, t. c.
- Prenes*, characters, p. 507, *P. evadnes*, figure, pl. xcvi, figg. 47, 48, *pauper*, pl. xcvi, figg. 1–3, *nero*, figg. 4–7, *philippina*, figg. 8, 9, *ares*, figg. 10–12, *ocola*, figg. 13–15, *vala*, figg. 16–18, GODMAN, t. c.
- Pyrgus polingii*, Arizona, BARNEs, p. 44, Canad. Ent. xxxii, n. sp.
- Rhithron* n. g., p. 530, type *Proteides chiriquensis* Mab., figured, pl. xcvi, figg. 41–44, and *cyneus*, pl. xcvi, figg. 1–3, *melius*, figg. 7, 8, and the following n. spp. from Central America, *albus*, p. 532, pl. xcvi, figg. 4–6, *epaphus*, figg. 9, 10, *megalops*, figg. 11–13, p. 533, GODMAN, Biol. Centr.-Amer. Rhopal. ii.
- Stomyles*, characters, p. 501, *S. tolteca* figured, pl. xcvi, figg. 21–23, *comus* figg. 25, 26, *nereus*, figg. 27–30, GODMAN, t. c.
- S. florus*, Mexico, p. 502, pl. xcvi, fig. 24, GODMAN, t. c. n. sp.
- Syrichthus inachus* var. *tibetana*, AUSTAUT, p. 48, Naturaliste xxii.
- Tagiades multipunctatus*, Hainan, CROWLEY, p. 510, P. Zool. Soc. London 1900, n. sp.
- Telicota mingo*, habitat queried, HOLLAND, p. 85, Nov. Zool. vii.
- Telles* n. g., p. 518, for *Pap. arcalaus* Cr., figured, pl. xcvi, fig. 36, GODMAN, Biol. Centr.-Amer. Rhopal. ii.

- Thargella*, n. g., p. 564, for *T. fuliginea* n. sp., Centr. and S. America, p. 565, pl. c, figg. 24, 25, GODMAN, t. c.
- Thespieus* n. g., p. 519, with numerous S. American forms, the following figured *dalmanni*, pl. xcvi, figg. 37–40, *macareus*, figg. 41–43, *orinia*, pl. xvii, figg. 1, 2, GODMAN, t. c.
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- Thymelicus vibex*, synonymy, p. 480, sexes, pl. xciii, figg. 12–16, *athenion*, fig. 17, GODMAN, t. c.
- Tigana* n. g. near *Cobalus* for *T. zulatae* n. sp., Costa Rica, pl. xcix, figg. 4, 5, GODMAN, p. 544, t. c.
- Tirynthia* n. g., p. 523, for *Gonioba confusa*, figured, pl. xcvi, figg. 17–20, GODMAN, t. c.
- Vacerra* n. g., p. 521, type *H. litana* Hew., figured, pl. xcvi, figg. 3–8, *egea* Hew., figg. 9–11, *canente* Butl., figg. 14–16, GODMAN, t. c.
- V. lachares*, Costa Rica, p. 523, pl. xcvi, figg. 12, 13, GODMAN, t. c. n. sp.
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- Vinius* n. g. for *V. arignote* n. sp., S. America, p. 580, and *Pamphila sagitta* Mab., figured, pl. ci, figg. 42, 43, GODMAN, t. c.
- Vorates* n. g., p. 577, type *Cobalus decora* H.-S., figured, pl. ci, figg. 26–29, with *V. sapala* n. sp., Panama, p. 578, pl. ci, figg. 30, 31, GODMAN, t. c.
- Xeniades* n. g. type *P. orchamus* Cr., figured, pl. xcvi, fig. 31, p. 517, with *X. pteras* n. sp., S. and Centr. America, p. 518, pl. xcvi, figg. 32–35, GODMAN, t. c.
- Zariaspes* n. g., type *Urbanus mys* Hübn., figured, pl. xciii, figg. 30, 31, p. 485, with *Z. mythecus* n. sp., Mexico, figg. 32–36, p. 486, GODMAN, t. c.
- Zenis* n. g., type *Hesperia minos* Latr., GODMAN, p. 585, t. c.

HETEROCERA.

Earth cocoons formed by exudation not spinning, SOULE (1956).

CASTNIIDÆ.

Aegiale streckeri, habits, OSLAR, pp. 495–498, Ent. News Philad. xi.

SPHINGIDÆ.

[Cf. AURIVILLIUS (45), DYAR (354), FAWCETT (406), HAMPSON (545), HOLLAND (595), KARSCH (680), NICÉVILLE (942), PAGENSTECHER (975), PETERSEN (983), ROTHSCILD (1136).]

Acherontia atropos, natural history, voice-organ (in Hungarian), AIGNER (13).

Amphonyx antæus, early stages, DYAR, p. 256, P. U. S. Mus. xxiii.

Cautesia grotei, larva, DYAR, p. 255, t. c.

Cephonodes hylas, larva, pupa, pl. xlvi, figg. 13–19, p. 312, FAWCETT, Tr. Zool. Soc. London xv.

Chærocampa brunnea Semp.=*buruensis* Rothschild., ROTHSCHILD, p. 274, Nov. Zool. vii; *C. capensis*, larva, pupa, pl. xlvi, figg. 17–19, *ostris*, larva, pupa, pl. xlvi, figg. 3–6, *balsaminae*, larva, pupa, pl. xlvi,

- figg. 1, 2, *idricus*, larva, pupa, pl. xl ix, figg. 1, 2, FAWCETT, pp. 308–310, Tr. Zool. Soc. London xv.
- C. undulata*, Congo, AURIVILLIUS, p. 1050, Ofv. Ak. Forh. lvii; *C. hyporhoda*, India, HAMPSON, p. 39, pl. B, fig. 12, J. Bombay Soc. xiii; *C. kuhni*, Dammer Island, pl. v, fig. 2, *lunata*, Khasia hills, ROTHSCHILD, p. 274, Nov. Zool. vii : n. spp.
- Daphnis dohertyi*, description, p. 242, cut, p. 243, PAGENSTECHER, Zoologica xxix.
- Hemaris tenuis* and *diffinis*, one species, larvæ, SMYTH, pp. 584–589, Ent. News Philad. xi.
- Lophostethus dumolinii*, larva, pupa, pl. xl viii, figg. 7, 8, p. 307, FAWCETT, Tr. Zool. Soc. London xv.
- Macroglossa glaucoplaga*, Sikkim, HAMPSON, p. 40, pl. B, fig. 13, J. Bombay Soc. xiii; *M. buruensis*, Buru, HOLLAND, p. 556, Nov. Zool. vii; *M. belinda*, Bismarck Arch., PAGENSTECHER, Zoologica xxix, p. 19 : n. spp.
- Oenetus mirabilis* ♀, W. ROTHSCHILD, p. 24, Nov. Zool. vii.
- Protoparce mauritii*, larva, pupa, pl. xl viii, figg. 9–12, p. 311, FAWCETT, Tr. Zool. Soc. London xv; *P. rustica*, larva, SMYTH, p. 485, pls. x, xi, Ent. News Philad. xi.
- P. triangulifera*, Buru, HOLLAND, p. 556, Nov. Zool. vii, n. sp.
- Pseudosmerinthus semnus*, Madagascar, KARSCH, p. 370, Ent. Nachr. xxvi, n. sp.
- Sataspes hauxwellii*, Burma, NICÉVILLE, p. 173, pl. EE, fig. 22, J. Bombay Soc. xiii, n. sp.
- Sphinx convolvuli* var. *nigricans*, CANNAVIELLO, p. 295, Bull. Soc. ent. Ital. xxxii; *S. drupiferarum*, larva, FERNALD, p. 581, pl. xvi, Ent. News Philad. xi.

ÆGERIIDÆ (or SESIIDÆ).

[Cf. BEUTENMÜLLER (115–117), DYAR (360), HAMPSON (545), NICÉVILLE (942), PAGENSTECHER (975), PIEPERS & SNELLEN (1038).]

Summary of food-habits of larvæ of N. American *Sesiidae*, BEUTENMÜLLER (117).

Aegeria chrysophanes, early stages, ILLIDGE, p. 136, P. Soc. Queensland xv. *Ichneumonoptera cerulipes*, Sikkim, HAMPSON, p. 43, J. Bombay Soc. xiii, n. sp.

Lepidopoda n. g. for *L. heterogyna* n. sp., India, HAMPSON, p. 44, t. c. *Melittia binghamii*, Burma, NICÉVILLE, p. 174, pl. EE, fig. 24, t. c.; *M. ambigua*, Java, SNELLEN, p. 36, Tijdschr. Ent. xl iii : n. spp.

Paranthrene ruficollaris, Bismarck Arch., PAGENSTECHER, p. 21, pl. iv, fig. 26, Zoologica xxix, n. sp.

Sanininoidea græfii var. n. *barnesi*, BEUTENMÜLLER, p. 254, J. N. York Ent. Soc. viii.

Sciapteron trizonata, Sikkim, HAMPSON, p. 43, J. Bombay Soc. xiii, n. sp. *Sesia bombyliformis*, egg and young larva, JEFFREY, p. 10, Ent. Mag. xxxvi.

S. uniformis, Java, SNELLEN, p. 34, Tijdschr. Ent. xl iii; *S. rubripes*, Bismarck Arch., PAGENSTECHER, p. 22, Zoologica, xxix; *S. aretica* [described, p. 208, named p. 377] Alaska, BEUTENMÜLLER, Canad. Ent. xxxii and *S. aretica*, Alaska, BEUTENMÜLLER, p. 499, P. Washington Ac. ii; *S. mariona*, Colorado, BEUTENMÜLLER, p. 254, J. N. York Ent. Soc. viii : n. spp.

Trichocerota univitta, Sikkim, HAMPSON, p. 44, J. Bombay Soc. xiii, n. sp.

BOMBYCES.

[(*s. l.*, including AGARISTIDÆ, CHALCOSIIDÆ, URANIIDÆ, SARRO-THRIPINÆ etc.). (For EPIPLEMIDÆ see GEOMETRIDÆ.)]

[Cf. AURIVILLIUS (45), BARNES (71), CHAPMAN (237, 241), DISTANT (331), DOGNIN (340, 341), DRUCE (348, 349, 983), DUDGEON (352), DUPONT (353), DYAR (354, 356, 357, 358, 361, 362), FABRE (385, 386), FAWCETT (406), FUCHS (473), GRUM-GRSHIMAILO (541), HAMPSON (544, 545, 547, 548), HEYLAERTS (586), HOLLAND (595), JOANNIS (662), KARSCH (673, 676, 678, 679), LAMPA (796), LOWER (828, 829), LUCAS (832), MABILLE (843), MAYER (872, 873), PAGENSTECHER (976), PETERSEN (993), PIEPERS & SNELLEN (1038), POUJADE (1051), PÜNGELER (1060), QUAIL (1061, 1064), REBEL (1072, 1075), ROTHSCHILD (1136), SCHAUS (1151), SONTTHONNAX (1254), STAUDINGER (1268, 1269, 1270), STRECKER (1289), SWINHOE (1299), TUTT (1340-1342), VAYSSIÈRE & BORDAS (1353), WARREN (1375, 1376).]

Descriptive catalogue of *Nolinae* and *Lithosiinae*, HAMPSON (544). We refer to this work below as Cat. Lep. Phal. ii : the new genera and species and some of the figures are recorded, but not the synonymy. The number of species is 162 *Nolinae*, 1037 *Lithosiinae*.

The classification, families, phylogeny of *Psychidae* and *Lachnoides* (1340). Case-making of *Psychidae*, assembling of *Bombycidae*, FABRE (386).

Larval cases of *Laconomidae* (*Perophoridae*), DYAR (358).

Acanthopsyche opacella, habits, cases, development, CHAPMAN, Tr. ent. Soc. 1900, pp. 403-410, pl. viii.

A. carbonarius, W. Africa, KARSCH, p. 1, Ent. Nachr. xxvi ; *A. (Æctioides) minima*, Ceylon, HAMPSON, p. 227, J. Bombay Soc. xiii : n. spp.

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A. obliquifascia, Madras, HAMPSON, p. 232, pl. b, fig. 11, J. Bombay Soc. xiii, n. sp.

Amaxia theon, Venezuela, DRUCE, p. 66, Ann. Nat. Hist. vi, n. sp.

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- Arbela watsoni*, Madras, HAMPSON, p. 228, J. Bombay Soc. xiii; *A. salara*, Colombia, DRUCE, p. 513, Ann. Nat. Hist. v : n. spp.
- Arctia*, characters of the N. American species and their larvæ, DYAR (357);
A. caja ♂ var., FROHAWK, pl. iii, fig. 9, p. 103, Entomologist xxxiii ;
A. hebe var. *n. collaris*, *A. latreillei* var. *n. chinensis*, GRUM-GRSHIMAILO, Annuaire Mus. St. Petersb. iv, p. 369-378, Canad. Ent. xxxii.
- A. serarum*, Mongolia, GRUM-GRSHIMAILO, p. 463, Annuaire Mus. St. Petersb. iv, n. sp.
- Ariola continua* Walk., pl. ii, fig. 11, *deflexa* Walk., fig. 10, figures, SWINHOE, Cat. Lep. Het. ii.
- Artaxa arrogans*, Queensland, LUCAS, p. 140, P. Soc. Queensland xv, n. sp.
- Artona albicilia*, *flavipuncta*, pl. b, fig. 22, India, HAMPSON, p. 225, J. Bombay Soc. xiii, n. spp.
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- Atosia* n. g. for *Paraso dænia* Moore, SNELLEN, p. 92, Tijdschr. Ent. xlivi.
- Automeris*, protective attitudes, cocoons, p. 235, *A. janus*, larva, poisonous hairs, p. 236, BARRETT, Canad. Ent. xxxii ; *A. coresus*, *viridescens*, larve, BERG, p. 207, Comun. Mus. Buenos Aires i.
- A. obscura*, *postalbida*, *flammans*, p. 228, *amanda*, p. 229, S. America, SCHAUS, J. N. York Ent. Soc. viii, n. spp.
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- Bantana albida* Walk., figure, pl. ii, fig. 12, SWINHOE, Cat. Lep. Het. ii.
- Belemnia attidates*, p. 508, *mygdon*, p. 509, Colombia, DRUCE, Ann. Nat. Hist. v, n. sp.
- Billetia* n. g. near *Stauropus*, for *B. rubripuncta* n. sp., Tonkin, JOANNIS, p. 281, Bull. Soc. ent. France 1900.
- Blabiooides* n. g., p. 279, type *Pseudoblabes snelleni* Rits., HAMPSON, Cat. Lep. Phal. ii.
- Blenina calena*, Queensland, SWINHOE, p. 81, pl. ii, fig. 10, Cat. Lep. Het. ii, n. sp.
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- Brachiosia* n. g. *Lithosiinae*, p. 334, for *B. castaneola* n. sp., Sangir, p. 335, HAMPSON, Cat. Lep. Phal. ii.
- Brachyglene grandis*, Colombia, DRUCE, p. 510, Ann. Nat. Hist. v, n. sp.
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- Calidota* n. g. for *Arctia strigosa* Walk., larva of which described, DYAR, pp. 267-270, P. U. S. Mus. xxiii.
- Callidula miokensis* Pag. to *Cleis*, p. 31, pl. iii, figg. 8, 11, PAGENSTECHER, Zoologica xxix.
- Calligenia limonis*, Queensland, LUCAS, p. 139, P. Soc. Queensland xv, n. sp.
- Callimorpha* referred to *Hypsoïda*, HAMPSON, p. 1, P. ent. Soc. London 1900; *C. dominula* var., FUCHS, p. 41, Jahrb. Nassau. Ver. liii; *C. dominula* var. n. *crocea*, SCHULTZ, p. 219, Illustr. Zeitschr. Ent. v.
- Callisthenia* n. g. type *Mæpha plicata* Butl., HAMPSON, p. 362, Cat. Lep. Phal. ii.
- Calloamia prometheia*, experiments on mating, MAYER (872, 873).
- Canerkes gloriosus*, Sumatra, pl. v, fig. 6, p. 275, *albivitta*, no locality, p. 276, ROTHSCHILD, Nov. Zool. vii, n. spp.
- Cania bilineata*, larva, PIEPERS, p. 85, pl. ii, fig. 7, Tijdschr. Ent. xlivi.
- Caprina bipars*, Solomon Is., *rotunda*, Louisiade group, HAMPSON, p. 289, Cat. Lep. Phal. ii, n. spp.
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- Caulocera* n. g. type *Chamaita crassicornis* Walk., with *C. xantholopha* n. sp., Pulo Laut, HAMPSON, p. 529, Cat. Lep. Phal. ii.
- Caviria dubia*, Congo, AURIVILLIUS, p. 1056, Ofv. Ak. Forh. lvii, n. sp.
- Celama geminata*, Madagascar, MABILLE, p. 727, Ann. Soc. ent. France lxvii, n. sp.
- Caprinima* n. g. *Lithosiina*, for *albicollis* Pagenst., HAMPSON, p. 561, Cat. Lep. Phal. ii.
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- Ceratonema albividisum*, Sikkim, HAMPSON, p. 232, J. Bombay Soc. xiii; figure, t. c., pl. i, fig. 10, p. 265 : n. sp.
- Cerura phyllis*, Brazil, DRUCE, p. 517, Ann. Nat. Hist. v, n. sp.
- Chalia pungerii*, Japan, HEYLAERTS, p. 190, Ann. Soc. ent. Belgique xliv, n. sp.
- Chamaita metameleuca*, New Guinea, HAMPSON, p. 565, pl. xxxv, fig. 15, Cat. Lep. Phal. ii, n. sp.
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- Chilena sabrina*, Somaliland, DRUCE, p. 20, pl. i, fig. 2, P. Zool. Soc. London 1900, n. sp.
- Chionema obliquilineata*, Sikkim, pl. xxvi, fig. 24, p. 299, *ridleyi*, Singapore, pl. xxxiv, fig. 14, p. 300, *obecura*, Queensland, p. 301, *lutipes*, Philippines, pl. xxvii, fig. 1, *nigrilineata*, Sumatra, fig. 2, p. 311, *melanoplagia*, *fumea*, N. Guinea, p. 318, *marshalli*, Natal, fig. 26, p. 325, *infantula*, fig. 10, Borneo, p. 328, HAMPSON, Cat. Lep. Phal. ii, n. spp.
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- Chrysallactis* n. g. *Lithosiinae* for *C. aureorubra* n. sp., Louisiade Ids., HAMPSON, p. 334, t. c.
- Chrysochlorosia* n. g. *Lithosiinae*, p. 351, type *C. callistia* n. sp., Bolivia, p. 352, HAMPSON, t. c.
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- Cisthene subjecta*, egg and larva, DYAR, pp. 266–268, P. U. S. Mus. xxiii.
- C. unicincta*, Bogotá, HAMPSON, p. 246, Cat. Lep. Phal. ii, n. sp.
- Cleis dichroa, propinqua*, synonymy, HOLLAND, p. 558, Nov. Zool. vii.
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- Cletthara herbida* Walk. (as *Dumatha*) figure, SWINHOE, p. 78, Cat. Lep. Het. ii.
- Clistiocampa disstria*, popular name, SLINGERLAND, HOWARD, Canad. Ent. xxxii, p. 54.
- C. vulpes*, Chitral, HAMPSON, p. 233, pl. b, fig. 26, J. Bombay Soc. xiii, n. sp.
- Clōesia* n. g. for *Ichoria partia* Druce, HAMPSON, p. 345, Cat. Lep. Phal. ii.
- Coloradia doris*, Colorado, BARNES, p. 46, Canad. Ent. xxxii, n. sp.
- Conosia* n. g. for *Lithosia aspersa* Walk., HAMPSON, p. 542, Cat. Lep. Phal. ii.
- Conilepia* n. g. for *Eomistis nigricosta* Leech, HAMPSON, p. 219, t. c.
- Cossus ligniperda*, pupation, ADKIN, MAY, Entomologist xxxiii, p. 128; CARTER, t. c. p. 158; *C. ore* and *ligniperda*, eggs, CHAPMAN, p. 317, Ent. Rec. xii.
- C. stertzi*, Central Asia, PÜNGELER, p. 288, pl. viii, fig. 3, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Crambidia scoteola*, Bolivia, pl. xxi, fig. 25, p. 127, HAMPSON, Cat. Lep. Phal. ii, n. sp.
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- Crinodes minuta*, Amazons, DRUCE, p. 516, Ann. Nat. Hist. v, n. sp.
- Cteniosa* n. g. type *Pusiola psestriphora* Dist., HAMPSON, p. 130, Cat. Lep. Phal. ii.
- Ctenucha mennisata*, Bolivia, DOGNIN, p. 213, Ann. Soc. ent. Belgique xliv, n. sp.
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- Cyclorella* n. g. for *Hemonia dulcicula* Swinh., HAMPSON, p. 548, t. c.
- Cyclosticta* n. g. for *discata* Schaus, HAMPSON, p. 188, t. c.
- Cynnia insulata*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- Cylopoda* etc., see *Geometridae*.
- Cypria argenna*, Madagascar, MABILLE, p. 724, Ann. Soc. ent. France Ixviii, n. sp.
- Cyptonychia* n. g. *Lithosiinae* for *flaviceps* Druce, HAMPSON, p. 253, Cat. Lep. Phal. ii.
- Dalailama*, characters and position, REBEL, p. 107, Deutsche ent. Zeitschr. Lep. xiii.
- Darala consuta*, Queensland, LUCAS, p. 139, P. Soc. Queensland xv, n. sp.
- Darantoides* n. g. *Lithosiinae*, p. 565, for *D. rubroflava* n. sp., New Guinea, pl. xxxv, fig. 13, p. 566, HAMPSON, Cat. Lep. Phal. ii.
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- Dusychira nivalis* var. *obscurata*, STAUDINGER, p. 337, Deutsche ent. Zeitschr. Lep. xii; *D. angulata*, pl. i, fig. 13, p. 415, *nigra*, pl. ii, fig. 19, p. 416, figures, DUDGEON, J. Bombay Soc. xiii; *D. grænlandica*, larva, AURIVILLIUS, p. 1137, Ofv. Ak. Forh. lvii; *D. goodi*, parasitic Lep. in nest of, JOANNIS (664).
- D. georgiana*, Natal, p. 314, pl. xl ix, fig. 19, larva, pupa, figg. 20, 21, FAWCETT, Tr. Zool. Soc. London xv, n. sp.
- Deroca hidda*, Jaintia Hills, SWINHOE, p. 306, Ann. Nat. Hist. vi, n. sp.
- Desmeocraea congoana*, Africa, AURIVILLIUS, p. 1049, Ofv. Ak. Forh. lvii, n. sp.
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- Diarhabdosia* n. g. for *Eustixia minima* Butl., HAMPSON, p. 517, t. c.
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- Diplonyx* n. g. *Lithosiinae* for *D. infumata* n. sp., S. Africa, HAMPSON, p. 249, t. c.
- Disaulota* n. g. for *Areva leptalina* Druce, HAMPSON, p. 189, t. c.
- Disoidemata* n.g. *Lithosiinae*, for *D. osmophora* n. sp., Mexico, HAMPSON, p. 188, t. c.
- Drepana (Gogane) tetrathyra*, Madagascar, MABILLE, p. 724, Ann. Soc. ent. France lxviii; *D. undulifera*, Tibet, HAMPSON, p. 228, pl. b, fig. 10, J. Bombay Soc. xiii : n. spp.
- Dryopteris adona*, Florida, STRECKER, p. 30, Suppl. iii, n. sp.
- Dudgeonea* n. g. *Cossida* for *D. leucosticta* n. sp., India and Africa, HAMPSON, p. 227, J. Bombay Soc. xiii.
- Dulichia fasciata*, larva, pl. xl ix, figg. 13, 14, p. 314, FAWCETT, Tr. Zool. Soc. London xv.
- Dycladia lydia*, S. Brazil, DRUCE, p. 64, Ann. Nat. Hist. vi, n. sp.
- Eurias cloruna* var. *aflatana*, FUCHS, p. 37, Jahrb. Nassau. Ver. liii; *E. insulana*, larva, cocoon, pl. xl ix, figg. 25, 26, p. 316, FAWCETT, Tr. Zool. Soc. London xv.
- E. turana*, Transcaspian, GRUM-GRSHIMAILO, p. 461, Annuaire Mus. St. Petersb. iv; *E. crocea*, Comoro Ids., MABILLE, p. 727, Ann. Soc. ent. France lxviii : n. spp.
- Eilema* Hubn. altered to *Ilema*, HAMPSON, p. 130, Cat. Lep. Phal. ii.
- Emydia cibrum* varr., SOUTH, pp. 67, 68, figg. 1-7, Entomologist xxxiii.
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- Endugria jordana* var. *suavis*, pl. v, fig. 7, p. 355, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii.
- Endoxyla anceps*, Java, SNELLEN, p. 40, Tijdschr. Ent. xl iii, n. sp.
- Engyophlebus* n. g. *Oeceticinarum*, p. 2, for *E. obesus* n. sp., W. Africa, p. 3, KARSCH, Ent. Nachr. xxvi.
- Epichnopteryx* subg. n., see *Rebelia*; *E. pulla* var. n. *montana montanella*, HEYLAERTS, p. 189, Ann. Soc. ent. Belgique xliv.
- E. alpina*, Switzerland, HEYLAERTS, p. 189, t. c. n. sp.
- Eressa catoria*, Jaintia Hills, SWINHOE, p. 305, Ann. Nat. Hist. vi, n. sp.
- Estigmene tenuistrigata*, Mashonaland, HAMPSON, p. 54, Ann. S. African Mus. ii, n. sp.
- Eucereon confine*, larva, DYAR, p. 262, P. U. S. Mus. xxiii.
- E. catolia*, p. 507, *ino*, *resina*, p. 508, Colombia, DRUCE, Ann. Nat. Hist. v; *E. giganteum*, Colombia, *testaceum*, *E. ? fanum*, Venezuela, DRUCE, p. 65, op. cit. vi; *E. costinotatum*, Brazil, *intranotatum*, Ecuador, DOGNIN, p. 436, Ann. Soc. ent. Belgique xliv : n. spp.

- Euclea herbina, dolita, baranda*, S. America, p. 230, *chiriquensis*, Chiriqui, p. 231, SCHAUER, J. N. York Ent. Soc. viii, n. spp.
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Euprepia, characters of N. American larvæ, DYAR, p. 46, J. N. York Ent. Soc. viii; *E. caja* var. *americana*, life-history, GIBSON, pp. 321–325, Canad. Ent. xxxii.
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Fumea, notes on, CHAPMAN, p. 202, Ent. Rec. xii; *F. casta* Vair., CHAPMAN, p. 124, t. c.
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- Pachycerosia* n. g. *Lithosiinae* for *P. bipuncta* n. sp., Andamans, HAMPSON, p. 270, t. c.
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- Palpifer sordida*, Java, SNELLEN, p. 30, Tijdschr. Ent. xlvi, n. sp.
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- Paramulona* n. g. for *Miesa albulata* H.-S., HAMPSON, p. 386, t. c.
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- Parasiiccia* n. g., p. 407, type *Aemene punctatissima* Pouj., with *P. nocturna* n. sp., Assam, p. 410, HAMPSON, Cat. Lep. Phal. ii.
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- Paurophleps* n. g. *Lithosiinae* for *P. minuta* n. sp. Cape Colony, HAMPSON, p. 531, t. c.
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- Pexinola* n. g. for *P. longirostris* n. sp., Tibet, HAMPSON, p. 79, Cat. Lep. Phal. ii.

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- Phaeophlebosia* n. g., type *Setina furcifera* Walk., HAMPSON, p. 109, Cat. Lep. Phal. ii.
- Phaeosia* n. g., type *Lithosia lutea* Druce, HAMPSON, p. 128, t. c.
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- Plotheara discigera* Walk. (as *Gadirtha*) figure, pl. ii, fig. 14, SWINHOE, Cat. Lep. Het. ii.
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- Procrimima* n. g. for *Lithosia procris* Feld., HAMPSON, p. 223, t. c.
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- Pronola* n. g. *Lithosiinae* type *P. magniplaga* Schaus, HAMPSON, p. 294, Cat. Lep. Phal. ii.
- Protosia* n. g., type *Apistosia terminalis* Walk., HAMPSON, p. 255, t. c.
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NOCTUIDÆ (incl. CYMATOPHORIDÆ).

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A. major, p. 64, *nunicola*, p. 67, *lucasi*, p. 68, *quadriplaga*, p. 72, *schwarzi*, *arida*, p. 73, *coquilletti*, p. 74, *neocula*, p. 75, *behrii*, p. 76, *meeki*, p. 79, *libidus*, p. 80, N. America, SMITH, Tr. Amer. ent. Soc. xxvii, n. spp.

Acontiola n. g. near *Acontia*, for *A. sancta* n. sp., Syria, pl. v, fig. 4, STAUDINGER, p. 382, Deutsche ent. Zeitschr. Lep. xii.

Acronycta; synonymous results of an examination of N. American in the British Museum, SMITH, Canad. Ent. xxxii, pp. 333-336; *A. alni* var., FUCHS, p. 46, Jahrb. nassau. Ver. liii.

A. nigricans, China, LEECH, p. 104, Tr. ent. Soc. London 1900, n. sp.

Adrapa ochracea, *marginata*, p. 614, *A. ? rivulata*, *incertalis*, p. 615, *reticulatis*, p. 616, China, LEECH, t. c.; *A. albapicata*, *albibasalis*, p. 572, *scotoea*, *speculifera*, p. 573, Buru, HOLLAND, Nov. Zool. vii : n. spp.

Ædia agropoides Walk. (as *Codesa*), pl. iv, fig. 17, *angulifera* Walk. (as *Anophiu*), pl. ii, fig. 26, figures, SWINHOE, Cat. Lep. Het. ii; *Æ. acronyctoides*, larva, pl. R, fig. 12, *longinguua*, fig. 18, pl. ix, larva and pupa, pl. R, figg. 14, 15, SEMPER, Schmetterl. Philipp. ii.

Æ. pruna, Philippines, id. t. c. p. 552, pl. ix, fig. 17, n. sp.

Agabra spotha, Nilgiri Hills, SWINHOE, p. 37, pl. i, fig. 16, Cat. Lep. Het. ii, n. sp.

Agonista fuscescens, China, India, LEECH, p. 549, Tr. ent. Soc. London 1900; *A. morio*, Philippines, SEMPER, p. 547, Schmetterl. Philipp. ii : n. spp.

Agrophila luda DRUCE, referred to *Tripudia*, SMITH, p. 489, P. U. S. Mus. xxii, n. sp.

Agrotis; varr. from Thian Schan, STAUDINGER, pp. 338-340, Deutsche ent. Zeitschr. Lep. xii; *A. glareosa* var. *n. limbata*, GOURL. n. 25, pl. v fig. 4, Act. Soc. Bordeaux v; *A. chaldaica* var. ——

- p. 289, Deutsche ent. Zeitschr. Lep. xii; *A. margaritacea* var., *plecta* var., FUCHS, p. 216, Jahrb. nassau, Ver. liii; *A. janthina* var. *n. latimarginata*, RÖBER, p. 204, Ent. Nachr. xxvi; *A. hadgina* var. *? zeitana*, pl. vi, fig. 6, p. 361, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii; *A. C-nigrum, segetum*, distribution, SNELLEN, Tijdschr. Ent. xliv, p. 47, Verslag; *A. griseocens, flammata*, larva, WULLSCHLEGEL, p. 289, Mt. Schweiz. ent. Ges. x; *A. segetis*, larva, pl. xlix, fig. 16, p. 317, FAWCETT, Tr. Zool. Soc. London xv.
- A. clarivena*, pl. iv, fig. 8, p. 116, *gaurax*, fig. 9, p. 117, *coryphaea*, fig. 4, p. 118, Centr. Asia, PÜNGELER, Deutsche ent. Zeitschr. Lep. xiii; *A. glebosa*, Taurus, pl. vi, fig. 5, p. 359, *sordescens*, Samarcand, *celebs*, fig. 4, Zeitun, p. 360, *homicida*, fig. 7, Amasia, *inumbrata*, Zeitun, p. 363, *cuprina*, fig. 11, *aquicuspis*, fig. 18, p. 365, Centr. Asia, STAUDINGER, op. cit. xii; *A. agalma*, p. 289, pl. viii, fig. 7, *bonza*, fig. 13, *perigrapha*, fig. 10, p. 290, *submolesta*, fig. 14, *humigena*, pl. ix, fig. 1, *hemileuca*, pl. viii, fig. 6, p. 291, Centr. Asia, PÜNGELER, t. c.; *A. pudens*, E. Africa, MABILLE, p. 728, Ann. Soc. ent. France lxviii; *A. plana, exoleta*, p. 26, *oberthuri*, p. 30, China, *post-flava*, Japan, p. 31, *conjuncta*, p. 32, *A. picturata, panda*, p. 33, China, LEECH, Tr. ent. Soc. London 1900; *A. saturnus*, Wisconsin, STRECKER, p. 31, Suppl. iii; *A. eremoides*, p. 257, *procellaris*, p. 258, Laysan Is., MEYRICK, Ent. Mag. xxxvi : n. spp.
- Alamis binea*, Colombia, DRUCE, p. 520, Ann. Nat. Hist. v, n. sp.
- Alotsa* n. g. for part of *Eutelia*, SWINHOE, p. 87, Cat. Lep. Het. ii.
- Amyna pulverea*, China, LEECH, p. 114, Tr. ent. Soc. London 1900, n. sp.
- Anarta myrtilli* var., FUCHS, p. 48, Jahrb. nassau. Ver. liii.
- A. lanuginosa, etacta*, Alaska, SMITH, p. 493, P. Washington Ac. ii, n. spp.
- Anepachetona* n. g. near *Doryodes*, for *A. bipartita* n. sp., Florida, SMITH, p. 482, P. U. S. Mus. xxii.
- Anigreea rubida*, figure, SWINHOE, pl. ii, fig. 16, Cat. Lep. Het. ii.
- Antiblemma minorata*, Florida, p. 492, *fasciata*, Arizona, p. 493, SMITH, P. U. S. Mus. xxii, n. spp.
- Anticasia ferruginea*, Florida, SMITH, p. 174, J. N. York Ent. Soc. viii, n. sp.
- Anuga constricta*, early stages, SEMPER, p. 532, pl. r, figg. 1-3, Schmetterl. Philipp. ii.
- Anytus atristriatus*, N. America, SMITH, p. 460, P. U. S. Mus. xxii; *A. obscurus*, Calgary, *profundus*, Manitoba, SMITH, p. 218, Canad. Ent. xxxii : n. spp.
- Apamea rubella* var. *rhusia*, PÜNGELER, pl. ix, fig. 11, p. 293, Deutsche ent. Zeitschr. Lep. xii.
- A. intermedia*, Japan, p. 60, *concinna, montana*, p. 61, *tripartita*, p. 62, *intermixta*, p. 63, *butleri*, p. 64, *fasciculata*, p. 65, *A. clava*, p. 66, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Aplectoides obscura*, China, id. t. c. n. sp.
- Arbostola viridis*, Colombia, DRUCE, p. 519, Ann. Nat. Hist. v, n. sp.
- Arctiasia plagiatula*, larva and pupa, SEMPER, pl. q, figg. 6, 7, Schmetterl. Philipp. ii.
- Argiva aerea*, Gilolo, SWINHOE, p. 116, Cat. Lep. Het. ii, n. sp.
- Arstionche colorada*, N. America, SMITH, p. 414, P. U. S. Mus. xxii, n. sp.
- Atacira* n. g. for *Eutelia approximata* Walk., SWINHOE, p. 87, Cat. Lep. Het. ii.
- Attatha regalis*, larva and pupa, pl. t, figg. 3-5, p. 566, SEMPER, Schmetterl. Philipp. ii.
- Avita guttulosa* Walk. (as *Osca*), figure, SWINHOE, pl. iii, fig. 6, Cat. Lep. Het. ii.
- Batracharta cassoides* Walk. (as *Carissa*), figure, SWINHOE, pl. iii, fig. 10, t. c.

- Beara subruba*, Bismarck Arch., PAGENSTECHER, pl. ii, fig. 35, p. 94, Zoologica xxix, n. sp.
- Bertula larusalis* Walk. (as *Isana*), pl. iv, fig. 11, *alpheusalis*, fig. 6, *eudoxusalis* Walk. (as *Bocana*), pl. iii, fig. 23, figures, SWINHOE, Cat. Lep. Het. ii.
- Bessara quadratipennis*, figure, pl. iii, fig. 17, SWINHOE, t. c.
- Blepharidia* n. g. for *Helioptobus lama* Püng. (below), *H. grumi* Alph., *Hadena dianthæcina* Staud. and *Trigonophora grumi* Alph., PÜNGELER, p. 122, Deutsche ent. Zeitschr. Lep. xiii.
- Bleptina tenebrosa*, Madagascar?, MABILLE, p. 735, Ann. Soc. ent. France lxviii; *B. albovenata*, *proxima*, p. 619, *ambigua*, *tripartita*, p. 620, *curvilinea*, p. 621, *descripta*, *sinuosa*, p. 622, *propugnata*, p. 623, *nigristigma*, *venata*, p. 624, *rectilinea*, *contigua*, p. 625, *parallela*, p. 626, *albolinealis*, *B. vestitialis*, p. 627, China, LEECH, Tr. ent. Soc. London 1900; *B. flocculalis*, Bismarck Arch., PAGENSTECHER, p. 117, pl. ii, fig. 31, Zoologica xxix : n. spp.
- Bocana histaspesalis* Walk. (as *Bleptina*), figure, pl. iv, fig. 13, SWINHOE, Cat. Lep. Het. ii.
- Bocula limbata* Butl., pl. ix, fig. 1, p. 66, HAMPSON, Monogr. Christmas Island.
- Bæthantha guttulosa*, Borneo, SWINHOE, p. 593, pl. iii, fig. 6, Cat. Lep. Het. ii, n. sp.
- Bomolocha jugalis* Walk. (as *Hypena*), figure, SWINHOE, pl. iv, fig. 16, t. c. *B. vega*, New Mexico, SMITH, p. 494, P. U. S. Mus. xxii, n. sp.
- Brevipecten consanguis*, p. 513, *apicalis*, p. 514, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Brontypena* n. g. for *erimia* Pag., HOLLAND, p. 576, Nov. Zool. vii.
- Bryomima* n. g. near *Bryophila*, for *B. carducha* n. sp., Mardin, pl. vi, fig. 9, STAUDINGER, p. 357, Deutsche ent. Zeitschr. Lep. xii.
- Bryophila mæonis* var. *sordida*, *rubellina*, STAUDINGER, p. 358, t. c.; *B. postochrea*, larva and pupa, pl. q, figg. 8, 9, p. 521, SEMPER, Schmetterl. Philipp. ii.
- B. griseata*, China, LEECH, p. 139, Tr. ent. Soc. London 1900; *B. exquisita*, Queensland, LUCAS, p. 150, P. Soc. Queensland xv : n. spp.
- Bryophilopsis tarachoides*, Madagascar, MABILLE, p. 729, Ann. Soc. ent. France lxviii, n. sp.
- Calamia deserticola*, Biskra, pl. v, fig. 10, p. 371, *modesta*, JORDAN, p. 372, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Callopistria floridensis*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii. *C. venata*, *albomacula*, China, LEECH, p. 111, Tr. ent. Soc. London 1900; *C. furunculoides*, Bismarck Arch., PAGENSTECHER, p. 74, Zoologica xxix : n. spp.
- Calogramma festiva*, larva, pl. q, figg. 4, 5, p. 516, SEMPER, Schmetterl. Philipp. ii.
- Callyna figurans*, pl. lx, fig. 4, *valliana*, fig. 5, SEMPER, t. c.
- Camplochilus butleri*, Japan, LEECH, p. 647, Tr. ent. Soc. London 1900, n. sp.
- Capnodis punctivena*, early stages, DYAR, p. 274, P. U. S. Mus. xxiii. *C. acrosema*, Madagascar, MABILLE, p. 734, Ann. Soc. ent. France lxviii; *C. umbrifera*, Buru, HOLLAND, p. 571, Nov. Zool. vii; *C. punctivrena*, Florida, SMITH, p. 175, J. N. York Ent. Soc. viii; *C. octina*, p. 520, *albipunctata*, p. 521, Colombia, DRUCE, Ann. Nat. Hist. v : n. spp.
- Capotena scripta* Walk. (as *Arbasera*), figure, SWINHOE, pl. iii, fig. 11, Cat. Lep. Het. ii.
- Caradrina defixa* Walk. (as *Barbesola*), pl. i, fig. 1, SWINHOE, t. c.
- C. casearia*, Jordan, STAUDINGER, pl. v, fig. 1, p. 375, Deutsche ent. Zeitschr. Lep. xii; *C. chinensis*, p. 117, fuscæ, p. 118, China, *fuliginosa*, Japan, *radiata*, p. 120, *C. scounda*, p. 121, China. LAMM. Tr. ent.

- Soc. London 1900; *C. peltaloma*, N. S. Wales, LOWER, p. 32, P. Linn. Soc. N. S. Wales xxv; *C. insipida*, Wisconsin, STRECKER, p. 32, Suppl. iii; *C. leucorena*, California, SMITH, p. 477, P. U. S. Mus. xxii : n. spp.
- Carea variegata*, China, LEECH, p. 524, Tr. ent. Soc. London 1900, n. sp.
- Carneades pugionis*, p. 419, *nevada*, p. 420, *contagionis*, p. 421, *loya*, *flaviscapula*, p. 422, *excogita*, p. 423, *exculta*, *navulus*, p. 424, *megalista*, *stigmatalis*, p. 425, *termessus*, p. 426, *enteridis*, p. 427, *atropulverea*, p. 428, *compressipennis*, *falerina*, p. 429, *vallus*, p. 430, *sessile*, p. 431, *relaxus*, p. 432, *luteositus*, *tocoyae*, p. 433, *incubita*, p. 435, *terrenus*, *territorialis*, p. 436, *fulda*, p. 437, *itodes*, p. 438, *lagannei*, p. 439, *ontario*, *testula*, p. 440, *diformis*, p. 441, *dakoto*, p. 442, *holoberba*, *kerrvillei*, p. 443, *ternarius*, p. 444, *noctuiformis*, p. 445, *intrusa*, *neotelis*, p. 446, *atrofusca*, p. 447, *objurgata*, p. 448, *cariosus*, p. 449, *malis*, p. 450, *pindar*, p. 451, *henrietta*, p. 452, *vanidicus*, p. 453, *feminalis*, p. 454, *nordica*, p. 455, *factoris*, p. 456, *cessus*, p. 457, *acutifrons*, p. 458, *selenis*, p. 459, *laminis*, p. 460, N. America, SMITH, P. U. S. Mus. xxii, n. spp.
- Catada charalis*, Queensland, SWINHOE, p. 311, Ann. Nat. Hist. vi, n. sp.
- Catocala*: notes on N. American, FRENCH, pp. 188–191, Canad. Ent. xxxii; *C. nupta*, abundance in England in 1900, habits, LUCAS, NASH, Entomologist xxxii, p. 271.
- C. abacta*, Asia Minor, STAUDINGER, p. 113, Deutsche ent. Zeitschr. Lep. xiii; *C. invasa*, p. 531, *hampsoni*, p. 532, *butleri*, p. 534, *columbina*, p. 535, China, LEECH, Tr. ent. Soc. London 1900; *C. barnesi*, Texas, FRENCH, p. 190, Canad. Ent. xxxii; *C. moderna*, Texas, GROTE, p. 191, t. c.; *C. titania*, Louisiana, DODGE, p. 472, Ent. News Philad. xi : n. spp.
- Cauninda archesia*, larva, pl. T, fig. 1, p. 564, SEMPER, Schmetterl. Philipp. ii.
- Cerastis intricata*, characters and synonymy, OBERTHUR, pp. 352–355, Bull. Soc. ent. France 1900.
- Cerocala munda*, Somaliland, DRUCE, p. 19, pl. i, fig. 3, P. Zool. Soc. London 1900, n. sp.
- Cerynea diversalis* Walk. (as *Bertula*), figure, SWINHOE, p. 68, Cat. Lep. Het. ii.
- Chaladra cuculloides*, figure, pl. iii, fig. 2, SWINHOE, t. c.
- Chamyla* n. g., position doubtful, for *C. idia* n. sp., pl. vii, fig. 9, Thian Schan, STAUDINGER, p. 343, Deutsche ent. Zeitschr. Lep. xii.
- Chloanthal' conjuncta*, Centr. Asia, PÜNGELER, pl. ix, fig. 15, p. 294, t. c. n. sp.
- Chorsia maculosa* Walk., figure, pl. viii, fig. 23, SWINHOE, Cat. Lep. Het. ii.
- Chytolita morbidalis*, early stages, DYAR, p. 278, P. U. S. Mus. xxiii.
- Chyonix semifascia*, Colorado, SMITH, p. 415, t. c. n. sp.
- Cleophana vallogeri*, Biskra, STAUDINGER, pl. v, fig. 9, p. 378, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Cœlophoris* n. g. *Gonoptera*, for *C. trilineata* n. sp., Africa or Madagascar, MABILLE, p. 733, Ann. Soc. ent. France Lxviii.
- Conacontia* n. g., p. 49, for *C. flavicosta* n. sp., New Mexico, p. 58, and *Tarache angustipennis* Grote, SMITH, p. 59, Tr. Amer. ent. Soc. xxvii.
- Copibryophila* n. g., *Bryophilides*, for *C. angelica* n. sp., California, p. 416, SMITH, P. U. S. Mus. xxii.
- Corgatha quadricostaria* Walk. (as *Hyria*?), figure, note, *C. implexata* Walk. (as *Palara*), pl. i, fig. 26, *C. aqua* Walk. (as *Ausinza*), pl. ii, fig. 18, *C. albicinetalis* Walk. (as *Zitna*), fig. 13, figures, SWINHOE, p. 69, Cat. Lep. Het. ii.
- Corgatha tana*, N. China, SWINHOE, p. 69, pl. ii, fig. 9, t. c. n. sp.
- C. fasciola*, Japan, LEECH, p. 512, Tr. ent. Soc. London 1900, n. sp.

- Cosmia notabilis* Walk. (as *Dorippa*), figure, pl. i, fig. 13, SWINHOE, Cat. Lep. Het. ii.
- C. punctirena*, N. America, SMITH, p. 222, Canad. Ent. xxxii, n. sp.
- Cosmophila vitiensis*, pl. ix, fig. 12, p. 67, HAMPSON, Monogr. Christmas Island.
- Craniophora obecura*, China, LEECH, p. 107, Tr. ent. Soc. London 1900, n. sp.
- Critholea prominens*, China, LEECH, p. 572, t. c. n. sp.
- Cucullia duplicata* var. *amena*, pl. vi, fig. 17, p. 379, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii; *C. argentina* var. n. *achalina*, PÜNGELER, p. 120, op. cit. xiii.
- C. griesescens*, China, LEECH, p. 99, Tr. ent. Soc. London 1900, n. sp.
- Cymatophora* n. sp., see *Geometridæ*.
- Dahlia* n. g. near *Helia*, for *D. hesperioides* n. sp., Bismarck Arch., PAGENSTECHER, p. 120, pl. i, fig. 13, Zoologica xxix.
- Dasyacampa staudingeri*, characters and varr., OBERTHUR, p. 355, Bull. Soc. ent. France 1900.
- Daxata trisignata*, Madagascar, MABILLE, p. 734, Ann. Soc. ent. France lxviii, n. sp.
- Desana* n. g. for *Plusia peninsula* Walk., SWINHOE, p. 26, pl. i, fig. 12, Cat. Lep. Het. ii.
- Dialлага n. g. Eucalypterides*, for *D. lutea* n. sp., Florida, SMITH, p. 483, P. U. S. Mus. xxii.
- Didigua seticornis* Walk. (as *Nonagria*), figure, SWINHOE, pl. iii, fig. 21, Cat. Lep. Het. ii.
- Diomea orbifera* Walk. (as *Zigera*), pl. iii, fig. 22, *absorbens* Walk. (as *Corsa*), fig. 14, figures, SWINHOE, t. c.
- Diphthera marmorea*, p. 136, *vivida*, p. 137, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Drasteria conspicua*, Canada, SMITH, p. 224, Canad. Ent. xxxii, n. sp.
- Dyrzela poaphiloides* Walk. (as *Thermezia*), figure, pl. i, fig. 7, SWINHOE, Cat. Lep. Het. ii.
- Egnasia minereusalis*, pl. iv, fig. 5, *celenoalis*, fig. 21, figures, SWINHOE, t. c.
- E. macularia*, Mauritius, MABILLE, p. 734, Ann. Soc. ent. France lxviii;
- E. manleyi*, Japan, LEECH, p. 609, Tr. ent. Soc. London 1900 : n. spp.
- Egryria* n. g. near *Trama*, p. 176, for *E. filaria* n. sp., Florida, p. 177, SMITH, J. N. York Ent. Soc. viii.
- Eleale plusiooides*, figure, pl. ii, fig. 24, SWINHOE, Cat. Lep. Het. ii.
- Elyra phleguealis*, pl. iii, fig. 15, *E. tespialis* Walk. (as *Neviasca*), pl. iv, fig. 12, figures, SWINHOE, t. c.
- Entomogramma bendooides* Walk. (as *Remigia*), pl. iii, fig. 8, *decernens* Walk. (as *Toxocampa*), fig. 19, figures, SWINHOE, t. c.
- E. radiata*, Bismarck Arch., PAGENSTECHER, p. 108, Zoologica xxix, n. sp.
- Epizeurus nigellus*, Illinois, STRECKER, p. 36, Suppl. iii, n. sp.
- Erastria fasciana*, variation, *stygia* Butl. and *distinguenda* Staud. are synonymous of *fasciana*, LEECH, p. 140, Tr. ent. Soc. London 1900.
- E. quadrimacula*, S. Africa or Malay?, *acrochiona*, S. Africa, MABILLE, p. 729, Ann. Soc. ent. France lxviii; *E. niveata*, p. 141, *confusa*, p. 143, *E. mandarina*, p. 145, China, LEECH, Tr. ent. Soc. London 1900; *E. griseomixta*, Christmas Is., HAMPSON, p. 68, pl. ix, fig. 5, Monogr. Christmas Island; *E. verecunda*, Bismarck Arch., PAGENSTECHER, p. 79, Zoologica xxix; *E. strigulataria*, Florida, SMITH, p. 173, J. N. York Ent. Soc. viii : n. spp.
- Ercheia dubia*, pl. ix, fig. 13, SEMPER, Schmetterl. Philipp. ii.
- Eublemma roseonivea* Walk. (as *Acontia*), pl. i, fig. 11, *E. intractata* Walk. (as *Capnodes*), fig. 23, figures, SWINHOE, Cat. Lep. Het. ii; *E.*, spp. feeding on *Coccida*, GREEN, p. 538, J. Bombay Soc. xiii; *E. amabilis*, larval habits, DUDGEON, p. 379, t. c.

- E. lurida*, Bismarck Arch., PAGENSTECHER, p. 84, pl. ii, fig. 43, Zoologica xxix, n. sp.
- Eulepa niveigutta*, figure, pl. i, fig. 21, SWINHOE, Cat. Lep. Het. ii.
- Euplexia albomaculata*, pl. ix, fig. 2, SEMPER, Schmetterl. Philipp. ii.
- E. ochrargyra*, Madagascar, MABILLE, p. 727, Ann. Soc. ent. France lxviii ; *E. brunnea*, p. 83, *olivacea*, p. 84, China, LEECH, Tr. ent. Soc. London 1900 ; *E. spilophanes*, Tasmania, SWINHOE, p. 21, pl. i, fig. 6, Cat. Lep. Het. ii : n. spp.
- Eurois pryeri*, Japan, *munda*, p. 92, *hampeoni*, p. 93, *fulminea*, p. 94, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Eutelia vulgaris*, p. 731, *gilvicolor*, p. 732, E. Africa, MABILLE, Ann. Soc. ent. France lxviii ; *E. sclerata*, Buru, HOLLAND, p. 564, Nov. Zool. vii : n. spp.
- Fagitalia obliqua*, Florida, SMITH, p. 174, J. N. York Ent. Soc. viii, n. sp.
- Felinia nigripalpis* Walk. (as *Toxocampa*), figure, pl. iii, fig. 12, SWINHOE, Cat. Lep. Het. ii.
- Flammonia quadriplagiata* Walk., figure, pl. i, fig. 24, SWINHOE, t. c.
- F. trilineata*, China, LEECH, p. 562, Tr. ent. Soc. London 1900, n. sp.
- Fodina cunicularia*, larva, p. 566, pl. t, fig. 66, SEMPER, Schmetterl. Philipp. ii.
- Fruva apicella*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- Gadirtha pulchra*, pl. ix, fig. 7, SEMPER, Schmetterl. Philipp. ii.
- G. exacta*, Philippines, SEMPER, p. 527, pl. ix, fig. 6, t. c. n. sp.
- Gariga argentininea* Walk., figure, pl. viii, fig. 15, SWINHOE, Cat. Lep. Het. ii.
- Gaurena gemella*, China, LEECH, p. 13, Tr. ent. Soc. London 1900, n. sp.
- Gespannia* n. g. for *Ginea pectoralis* Walk., SWINHOE, p. 162, Cat. Lep. Het. ii.
- Glottula dominica*, early stages, SEMPER, Schmetterl. Philipp. ii, pl. p, figg. 12-14 ; *G. pancratii*, larva, pl. xlix, figg. 17, 18, p. 317, FAWCETT, Tr. Zool. Soc. London xv.
- Gonitis editrix*, larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
- Gonodontia unica*, early stages, DYAR, p. 272, P. U. S. Mus. xxiii.
- Gortyna* and allies, historical synonymy, GROTE (537) ; *G. erepta*, noticed, GROTE, p. 107, Canad. Ent. xxxii.
- Gracilipalpus sublimatus*, Centr. Asia, PÜNGELER, pl. ix, fig. 13, p. 294, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Grammodes oeca*, Bismarck Arch., PAGENSTECHER, p. 108, pl. i, fig. 12, Zoologica xxix ; *G. cooma*, Queensland, SWINHOE, p. 158, Cat. Lep. Het. ii : n. spp.
- Graphiphora clava*, p. 38, *pallidula*, p. 39, *flavibrunnea*, p. 40, *tincta destituta*, p. 41, *mandarina*, p. 42, *nebula*, p. 43, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Gyrtona erebina*, Madagascar, MABILLE, p. 731, Ann. Soc. ent. France lxviii, n. sp.
- Hadena culta* var. n. *subviolacea*, LEECH, p. 55, Tr. ent. Soc. London 1900 ; *H. illoba* Butl.=*(Mamestra declinans* Staud.), LEECH, p. 56, t. c. ; *H. subornata*, p. 342, pl. vii, fig. 11, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii ; *H. secalis*, *strigilis*, larval habits, REUTER, pp. 23-32, Acta Soc. Faun. Fenn. xix, No. 1 ; *H. ochroleuca*, hermaphrodites, SCHULTZ, p. 303, pl. vii, fig. 7, Deutsche ent. Zeitschr. Lep. xii.
- H. remota*, Centr. Asia, PÜNGELER, pl. ix, fig. 19, p. 294, t. c. ; *H. ? lama*, Centr. Asia, STAUDINGER, pl. vi, fig. 16, p. 370, t. c. ; *H. tenera*, Alaska, SMITH, p. 491, P. Washington Ac. ii ; *H. una*, Wisconsin, STRECKER, p. 32, Suppl. iii ; *H. cerivana*, Calgary, SMITH, p. 220, Canad. Ent. xxxii ; *H. tapeta*, p. 467, *luteocinerea*, p. 468, *mustelina*, p. 469, *jocasta*, *tela*, p. 470, N. America, SMITH, P. U. S. Mus. xxii : n. spp.

- Hecatera confusa*, China, LEECH, p. 96, Tr. ent. Soc. London 1900, n. sp.
Heliodes angelica, p. 484, *restrictalis*, p. 485, California, SMITH, P. U. S. Mus. xxii, n. spp.
Heliophobus lama, Centr. Asia, PÜNGELER, p. 293, pl. ix, fig. 8, Deutsche ent. Zeitschr. Lep. xii, n. sp.
Heliothis separata Walk., pl. lx, fig. 1, SEMPER, Schmetterl. Philipp. ii.
H. copiosa, p. 23, *H. ? straminea*, p. 24, China, LEECH, Tr. ent. Soc. London 1900, n. sp.
Herchunda n. g. for *Premusa hirtissima* Walk., SWINHOE, p. 592, Cat. Lep. Het. ii.
Herminia iridescent, p. 151, *dormiens*, p. 152, Queensland, LUCAS, P. Soc. Queensland xv, n. spp.
Himella quadristigma, Arizona, SMITH, p. 480, P. U. S. Mus. xxii, n. sp.
Homoptera duplicitinea Walk. (as *Hadena*), figure, SWINHOE, pl. ii, fig. 17, Cat. Lep. Het. ii.
H. ? fasciata, China, LEECH, p. 553, Tr. ent. Soc. London 1900, n. sp.
Homohadena candida, Texas, SMITH, p. 478, P. U. S. Mus. xxii, n. sp.
Hyblea puera, early stages, SEMPER, p. 529, pl. q, figg. 15-17, Schmetterl. Philipp. ii. *Hyblea*, see also *Bombyces*.
H. aterrima, Buru, HOLLAND, p. 563, Nov. Zool. vii, n. sp.
Hydrellodes vexillifera, Christmas Is., HAMPSON, p. 68, pl. ix, fig. 6, Monogr. Christmas Island, n. sp.
Hydrycia, life-histories of N. American, BIRD, pp. 226-234 and 276-283, Canad. Ent. xxxii; *H.*, oviposition, BIRD, p. 209, J. N. York Ent. Soc. viii; *H. stramentosa*, notes on, MOFFAT, pp. 61-63, pl. ii, Canad. Ent. xxxii and GROTE, p. 119, t. c.; MOFFAT, p. 133, t. c.
Hyelopsis magna, China, LEECH, p. 146, Tr. ent. Soc. London 1900, n. sp.
Hypatra includens, larva and pupa, pl. s, figg. 14, 15, SEMPER, Schmetterl. Philipp. ii.
Hypena rhombalis var. n. *perspicua*, *obscura*, p. 657, LEECH, Tr. ent. Soc. London 1900; *H. obditalis*, larva, SWAINSON, p. 34, J. N. York Ent. Soc. viii.
Hypena albistriga, E. Africa, MABILLE, p. 736, Ann. Soc. ent. France lviii; *H. incisa*, p. 655, *mandarina*, p. 658, *insolita*, p. 659, *confusa*, *inambitiosa*, p. 660, China, *H. ? bipartita*, Japan, *pectinata*, p. 661, *simplex*, p. 662, China, LEECH, Tr. ent. Soc. London 1900 : n. spp.
Hypocala holcona, pl. ix, fig. 14, *violacea*, fig. 15, SEMPER, Schmetterl. Philipp. ii.
Ilurgis subeignata, Madagascar, MABILLE, p. 735, Ann. Soc. ent. France lviii, n. sp.
Ingura tripartita, Philippines, SEMPER, p. 532, pl. ix, fig. 8, and larva, pl. R, fig. 4, Schmetterl. Philipp. ii, n. sp.
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Leucania comma var. n. *rhodocomma*, PÜNGELER, p. 120, Deutsche ent. Zeitschr. Lep. xiii.
L. mesotrosta, Centr. Asia, PÜNGELER, pl. ix, fig. 9, p. 295, op. cit. xii; *L. opaca*, Centr. Asia, STAUDINGER, pl. vi, fig. 13, p. 374, t. c.; *L. proxima*, *nepos*, China, p. 100, *striata*, Japan, Loochoo, p. 127, *ferri-linea*, China, *pryeri*, Japan, p. 128, LEECH, Tr. ent. Soc. London 1900; *L. semicana*, Bismarck Arch. P. A. ii,

- fig. 37, *Zoologica* xxix; *L. stenographa*, S. Australia, LOWER, p. 30, P. Linn. Soc. N. S. Wales xxv; *L. sepulchralis*, Queensland, LUCAS, p. 149, P. Soc. Queensland xv; *L. velutina*, Florida, SMITH, p. 480, P. U. S. Mus. xxii : n. spp.
- Lyncestis amphix*, larva, SEMPER, p. 551, pl. II, fig. 11, Schmetterl. Philipp. ii.
- Lysimelia phineusalis*, pl. iv, fig. 14, *nothusalis*, fig. 15, *silialis*, fig. 23, figures, SWINHOE, Cat. Lep. Het. ii.
- Macaldenia palumba*, larva and pupa, pl. s, figg. 3, 4, SEMPER, Schmetterl. Philipp. ii.
- Malialtha vialis* Moore (as *Acontia*), figure, pl. i, fig. 9, SWINHOE, Cat. Lep. Het. ii.
- Mamestra lauta*, Centr. Asia, PÜNGELER, p. 119, Deutsche ent. Zeitschr. Lep. xiii; *M. bryoptera*, pl. ix, fig. 6, *decreta*, fig. 7, Centr. Asia, PÜNGELER, p. 292, op. cit. xii; *M. eversmanni*, pl. vi, fig. 14, p. 367, schneideri, p. 368, Centr. Asia, STAUDINGER, t. c.; *M. negussa*, Calgary, SMITH, p. 219, Canad. Ent. xxxii; *M. tacoma*, Washington, STRECKER, p. 31, Suppl. iii; *M. senatoria*, p. 461, *rainierii*, p. 462, *bolteri*, p. 463, *yakima*, *dilatata*, p. 464, *florida*, p. 465, *roseosuffusa*, p. 466, *griseata*, p. 467, N. America, SMITH, P. U. S. Mus. xxii : n. spp.
- Marapana ilatana*, Buru, HOLLAND, p. 576, Nov. Zool. vii, n. sp.
- Mastigophorus ochreostigma*, *modesta*, butleri, p. 629, *nigristigmata*, p. 630, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Maxilua frontalis* Walk., figure, pl. ii, fig. 8, SWINHOE, Cat. Lep. Het. ii.
- Mecodina duplicata*, p. 592, *lankesteri*, *externa*, p. 593, *costimacula*, *ambigua*, p. 594, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Meliopitis ankara*, Quetta, SWINHOE, p. 311, Ann. Nat. Hist. vi; *M. argos*, Colombia, DRUCE, p. 520, Ann. Nat. Hist. v : n. spp.
- Mesoplecta l. hampsoni*, China, LEECH, p. 618, Tr. ent. Soc. London 1900, n. sp.
- Metachrostis megalena*, S. Africa, MABILLE, p. 730, Ann. Soc. ent. France 1900; *M. chinensis*, p. 156, *brunnea*, p. 157, China, LEECH, Tr. ent. Soc. London 1900 : n. spp.
- Metaptila l. pitomela*, Melbourne, LOWER, p. 31, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Metatypa sericina*?, Madagascar, MABILLE, p. 730, Ann. Soc. ent. France lxviii, n. sp.
- Metopta* n. g. for *Spiramia rectifasciata* Mén., SWINHOE, p. 170, Cat. Lep. Het. ii.
- Micardia munda*, China, LEECH, p. 148, Tr. ent. Soc. London 1900, n. sp.
- Micraschus leptinia*?, Madagascar, MABILLE, p. 731, Ann. Soc. ent. France lxviii, n. sp.
- Mixtila* n. n. for *Pinacia* Walk., SWINHOE, p. 193, Cat. Lep. Het. ii.
- Moma gracilis*, India, SWINHOE, p. 101, pl. iii, fig. 1, t. c. n. sp.
- Murgisa orgyoides*, figure, pl. iv, fig. 7, SWINHOE, t. c.
- Mythimna grandis* var. n. *curvata*, LEECH, p. 130, Tr. ent. Soc. London 1900.
- Nenia typica* var. n. *issyca*, PÜNGELER, p. 119, Deutsche ent. Zeitschr. xiii.
- Naharra contracta*, figure, pl. iii, fig. 16, SWINHOE, Cat. Lep. Het. ii.
- Naranga cyclina*, p. 730, *nephoelea*, *leptinia*, p. 731, Africa or Madagascar, MABILLE, Ann. Soc. ent. France lxviii, n. spp.
- Narthecophora* n. g. near *Acopa*, p. 485, for *N. pulverea* n. sp., Arizona, p. 486, SMITH, P. U. S. Mus. xxii.
- Nebrissa bimacula* Walk., figure, pl. i, fig. 22, SWINHOE, Cat. Lep. Het. ii.
- Nephelodes pectinatus*, British Columbia, SMITH, p. 221, Canad. Ent. xxxii, n. sp.
- Neostictoptera* n. g. for *N. nigropuncta* n. sp., Colombia, DRUCE, p. 519, Ann. Nat. Hist. v.

- Nodaria turpalis?*, Madagascar, MABILLE, p. 735, Ann. Soc. ent. France lxviii; *N. tacea*, p. 574, *clathrata*, *rugosa*, p. 575, Buru, HOLLAND, Nov. Zool. vii; *N. annulata*, p. 632, *germania*, *angulina*, p. 633, *incerta*, *triplex*, p. 634, *centralis*, p. 637, *vermiculata*, p. 639, *paupercula*, *nigrinigma*, p. 640, *sinensis*, p. 641, *subnubila*, p. 642, *N.?* *alpherakyi*, *sordida*, p. 643, *punctilinea*, *angulata*, *mandarina*, p. 644, var. n. *pellens*, p. 645, China, LEECH, Tr. ent. Soc. London 1900; *N. porphyrialis*, Bismarck Arch., PAGENSTECHER, p. 119, Zoologica xxix : n. spp.
- Nyctipao pilosa*, China, LEECH, p. 548, Tr. ent. Soc. London 1900; *N. variegata*, Queensland, SWINHOE, p. 114, Cat. Lep. Het. ii : n. spp.
- Ochropleura subpurpurea*, p. 35, *mandarina*, p. 36, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Ommatostola popofensis*, Alaska, SMITH, p. 492, P. Washington Ac. ii, n. sp.
- Oncocnemis ciliata*, Colorado, SMITH, p. 478, P. U. S. Mus. xxii, n. sp.
- Ophideres jordani*, Buru, HOLLAND, p. 570, Nov. Zool. vii, n. sp.
- Ophiusa torrida*, pl. s. figg. 5-7, p. 558, *simillima*, figg. 8, 9, early stages, SEMPER, Schmetterl. Philipp. ii.
- O. swinhoei*, Philippines, SEMPER, p. 557, t. c.; *O. redundata*, Brisbane, SWINHOE, p. 141, cut, Cat. Lep. Het. ii : n. spp.
- Orrhodia torrida*, larva, WULLSCHLEGEI, p. 289, Mt. Schweiz. ent. Ges. x.
- Orthodes calceolarius*, Long Is., STRECKER, p. 33, Suppl. iii, n. sp.
- Orthogonia sera*, variation, varr. n. *grisea*, *plana*, LEECH, p. 50, Tr. ent. Soc. London 1900.
- Orthosia litura* var. n. *saturata*, SCHULTZ, p. 349, Illustr. Zeitschr. Ent. v; cf. TUTT, t. c. p. 383.
- O. jordana*, Jordan, STAUDINGER, pl. v, fig. 12, p. 376, Deutsche ent. Zeitschr. Lep. xii; *O. placata*, *conspicua*, p. 79, China, LEECH, Tr. ent. Soc. London 1900; *O. typhlopa*, S. Australia, LOWER, p. 30, P. Linn. Soc. N. S. Wales xxv : n. spp.
- Ortoptila iarbatalis*, figure, pl. iii, fig. 4, SWINHOE, Cat. Lep. Het. ii.
- Oruza nigropunctata*, Bismarck Arch., PAGENSTECHER, p. 86, Zoologica xxix, n. sp.
- Oxenanus* n. g., p. 201, for part of *Mastigophorus*, with *O. kalianus* n. sp., Borneo, p. 202, SWINHOE, Cat. Lep. Het. ii.
- Oxyodes* (subg. n. *Recipalpula*) for *O. billeti* n. sp., Tonkin, JOANNIS, p. 280, Bull. Soc. ent. France 1900.
- Oxythres* n. g. for *O. splendens* n. sp., Colombia, DRUCE, p. 517, Ann. Nat. Hist. v.
- Palada* n. g. *Heliothides*, p. 486, for *P. scarletina* n. sp., California, p. 487, SMITH, P. U. S. Mus. xxii.
- Palindia nicea*, *primulina*, Colombia, DRUCE, p. 518, Ann. Nat. Hist. v, n. spp.
- Palimpoestes brevis*, *brunnea*, China, LEECH, p. 18, Tr. ent. Soc. London 1900, n. spp.
- Palpangula?* *simiola*, Centr. Asia, PÜNGELER, pl. ix, fig. 12, p. 295, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Panilla costipunctata*, Japan, China, LEECH, p. 550, Tr. ent. Soc. London 1900, n. sp.
- Parora* n. g. *Erebiides?*, for *P. texana* n. sp., Texas, SMITH, p. 491, P. U. S. Mus. xxii.
- Penicillaria jocosatrix*, larva and pupa, pl. x, figg. 5, 6, *maculata*, larva, fig. 7, SEMPER, Schmetterl. Philipp. ii.
- P. vittalba*, Celebes, SEMPER, t. c. p. 534, pl. ix, fig. 9, n. sp.
- Peridroma incivis*, early stages, DYAR, p. 273, P. U. S. Mus. xxii.
- Perigea lucetta*, p. 474, *cervina*, p. 475, *texana*, p. 476, *coneore*, p. 477, N. America, SMITH, t. c. n. spp.

- Phlogophora subpurpurea*, p. 71, *fuscomarginata*, p. 72, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Phæbophilus turpis*, Thian Schan, STAUDINGER, pl. vii, fig. 8, p. 341, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Phyllodes punctifascia, dentilinea*, China, LEECH, p. 576, Tr. ent. Soc. London 1900, n. spp.
- Plecoptera nebulilinea* Walk. (as *Carteia*), SWINHOE, p. 150, Cat. Lep. Het. ii.
- P. antigona*, Buru, HOLLAND, p. 567, Nov. Zool. vii, n. sp.
- Plotheia celtis*, early stages, SEMPER, p. 529, pl. q, figg. 12–14, Schmetterl. Philipp. ii.
- Plumipalpia simplex*, China, LEECH, p. 646, Tr. ent. Soc. London 1900, n. sp.
- Plusia triplasia* var. *clarissa*, STAUDINGER, p. 381, Deutsche ent. Zeitschr. Lep. xii; *P. festuca* var., ARKLE, p. 10, Entomologist xxxiii; *P. festuca, contexta* and *putnami*, note, SNELLEN, pp. 46, 47, Verslag, Tijdschr. Ent. xliii; *P. chrysites* var. n. *disjuncta*, SCHULTZ, p. 349, Illustr. Zeitschr. Ent. v; cf. TUTT, t. c. p. 383.
- P. generosa*, Zeitun, STAUDINGER, pl. vi, fig. 8, p. 380, Deutsche ent. Zeitschr. Lep. xii; *P. hampsoni*, China, LEECH, p. 586, Tr. ent. Soc. London 1900; *P. chillagoes*, Queensland, LUCAS, p. 150, P. Soc. Queensland xv; *P. epsilon*, Alaska, OTTOLENGUI, p. 494, P. Washington Ac. ii : n. spp.
- Poeta denotalis* Walk., figure, pl. i, fig. 25, SWINHOE, Cat. Lep. Het. ii.
- Polia conspicua*, p. 94, *P. l. montana*, p. 95, China, LEECH, Tr. ent. Soc. London 1900; *P. extincta*, p. 471, *aceria*, p. 472, *dispar*, p. 473, *ochracea*, p. 474, N. America, SMITH, P. U. S. Mus. xxii : n. spp.
- Polydesma glaucinana*, larva, pupa, pl. xl ix, figg. 22, 23, p. 318, FAWCETT, Tr. Zool. Soc. London xv.
- P. staudingeri*, Corea, p. 551, *grisea*, Japan, China, p. 552, LEECH, Tr. ent. Soc. London 1900; *P. opala*, Bismarck Arch., PAGENSTECHER, p. 99, pl. ii, fig. 21, Zoologica xxix; *P. graphica*, Buru, HOLLAND, p. 566, Nov. Zool. vii : n. spp.
- Polyphænis sericata* var., FUCHS, p. 46, Jahrb. Nassau. Ver. lili.
- Prodenia littoralis*, larva and pupa, pl. q, figg. 1–3, SEMPER, Schmetterl. Philipp. ii.
- Prospalta siderea*, p. 121, *contigua, parva*, p. 122, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Pseudaglossa butleri*, p. 616, *albomaculata, annulata*, p. 617, China, LEECH, t. c.; *P. antipodalis*, p. 573, *P. l. buruensis*, p. 574, Buru, HOLLAND, Nov. Zool. vii : n. spp.
- Pseudohadena minuta*, Centr. Asia, PÜNGELER, pl. ix, fig. 10, p. 293, Deutsche ent. Zeitschr. Lep. xii; *P. l. deceptrix*, JORDAN, STAUDINGER, pl. v, fig. 15, p. 369, t. c. : n. spp.
- Pseudophia oppia*, p. 18, pl. i, fig. 1, *lineata*, p. 19, fig. 7, Somaliland, DRUCE, P. Zool. Soc. London 1900, n. spp.
- Pterochara* n. g. near *Thermesia*, for *P. dohertyi* n. sp., Buru, HOLLAND, p. 568, Nov. Zool. vii.
- Pterocyclophora hampsoni*, Philippines, pl. ix, fig. 16, p. 541, SEMPER, Schmetterl. Philipp. ii, n. sp.
- Pterogonia aurigutta* Walk. (as *Thalatta*), figure, pl. ii, fig. 7, SWINHOE, Cat. Lep. Het. ii.
- Ragana* n. g. for pt. of *Hydriodes*, SWINHOE, p. 204, t. c.
- Ragonotia* n. g. near *Senta*, for *R. striata* n. sp., Amurland, pl. vi, fig. 15, p. 372, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii.
- Raparna didyma, confusa*, Madagascar, MABILLE, p. 734, Ann. Soc. ent. France lxviii; *R. costiplaga*, Buru, HOLLAND, p. 572, Nov. Zool. vii : n. spp.
- Rhanidophora enucleata*, W. Africa, MABILLE, p. 732, Ann. Soc. ent. France lxviii, n. sp.

- Rectipalpula* subg. n., cf. *Oxyodes*.
Rema n. g. for part of *Polyderma*, SWINHOE, p. 121, Cat. Lep. Het. ii.
Remigia frugalis, larva, pl. t, fig. 2, p. 565, SEMPER, Schmetterl. Philipp. ii; *R. latipes*, early stages, DYAR, p. 276, P. U. S. Mus. xxiii; larva, SWAINSON, p. 33, J. N. York Ent. Soc. viii.
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Renia sobrialis and *larvalis* are seasonal forms, early stages, DYAR, pp. 280-282, P. U. S. Mus. xxiii.
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Risoba obstructa, early stages, SEMPER, pl. R, figg. 8-10, Schmetterl. Philipp. ii.
Rivula subpunctata Walk. (as *Cholimma*), figure, pl. i, fig. 20, SWINHOE, Cat. Lep. Het. ii.
R. ? bilinealis, China, LEECH, p. 159, Tr. ent. Soc. London 1900; *R. proleuca*, Buru, HOLLAND, p. 563, Nov. Zool. vii; *R. subrosea*, Bismarck Arch., PAGENSTECHER, p. 83, Zoologica xxix : n. spp.
Sandava xylitis (Meyr.), Queensland, SWINHOE, p. 192, Cat. Lep. Het. ii, n. sp.
Saragossa n. g., p. 111, for *Mamestra?* (*Saragossa*) *seboldi* n. sp., p. 109, Spain, STAUDINGER, Deutsche ent. Zeitschr. Lep. xiii.
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Sesamia nonagrioides var. *albiciplata*, natural history, ZEHNTNER (1427).
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Stiria consuela, Arizona, STRECKER, p. 34, Suppl. iii, n. sp.
Syneda mexicana var. n. *alba*, STRECKER, p. 35, t. c.
Synedoida subtermina, California, SMITH, p. 492, P. U. S. Mus. xxii, n. sp.
Synna subsignata Walk., figure, pl. iii, fig. 5, *S. actinoides* Walk. (as

- Elpia*), pl. iii, fig. 3, *S. subolivacea* Walk. (as *Cerbia*), pl. iv, fig. 3, figures, SWINHOE, Cat. Lep. Het. ii.
- S. samala*, Singapore, SWINHOE, p. 106, pl. iii, fig. 5, t. c.; *S. simplex*, p. 539, *sobrina*, p. 540, *albistigma*, p. 541, *plaga*, p. 542, *marginata*, p. 543, *postflavida*, *quadrinotata*, p. 544, *mandarina*, p. 545, China, LEECH, Tr. ent. Soc. London 1900 : n. spp.
- Sympis ochreobasis*, Bismarck Arch., PAGENSTECHER, p. 104, pl. ii, fig. 34, Zoologica xxix, n. sp.
- Tenioampa opima* var. *n. mediolugens*, SCHULTZ, p. 349, Illustr. Zeitschr. Ent. v; cf. TUTT, t. c. p. 383.
- Teniopyga sylvina*, larva, pupa, pl. xlvi, figg. 10-12, p. 318, FAWCETT, Tr. Zool. Soc. London xv.
- Talapa?* *obliquilineata*, China, LEECH, p. 646, Tr. ent. Soc. London 1900, n. sp.
- Talariga capacior*, figure, pl. iv, fig. 4, SWINHOE, Cat. Lep. Het. ii.
- Tambana e-album*, China, LEECH, p. 525, Tr. ent. Soc. London 1900, n. sp.
- Tapinostola improba*, Thian Schan, STAUDINGER, p. 343, Deutsche ent. Zeitschr. Lep. xii; *T. taurica*, Marasch, STAUDINGER, p. 374, t. c. : n. spp.
- Tarache admetralis* Walk. (as *Pyralis*), figure, SWINHOE, pl. i, fig. 14, Cat. Lep. Het. ii.
- T. sublota*, Madagascar, *decoripennis*, *costosa*, E. Africa, p. 728, *acontina*, Africa, p. 729, MABILLE, Ann. Soc. ent. France lxviii; *T. tripartita*, China, LEECH, p. 149, Tr. ent. Soc. London 1900 : n. spp.
- Targalla obliquata* Walk. (as *Eutelia*), figure, pl. ii, fig. 6, SWINHOE, Cat. Lep. Het. ii.
- Telesilla pallida*, China, LEECH, p. 589, Tr. ent. Soc. London 1900, n. sp.
- Thalpochara wagneri* var. *ochreola*, STAUDINGER, p. 385, Deutsche ent. Zeitschr. Lep. xii.
- T. deserta*, Biskra, p. 383, *vestalis*, Dead Sea, p. 385, STAUDINGER, t. c. n. spp.
- Thargelia pusilla*, Centr. Asia, PÜNGELER, pl. iv, fig. 10, p. 118, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Thermecia paucula*, larva, SWAINSON, p. 34, J. N. York Ent. Soc. viii.
- Thermesia clarilinea*, *junctilinea*, Africa, MABILLE, p. 732, Ann. Soc. ent. France lxviii; *T. orientalis*, *mandarina*, *T. butleri*, China, p. 570, *brunnea*, Japan, p. 571, LEECH, Tr. ent. Soc. London 1900; *T. lichenea*, Buru, HOLLAND, p. 569, Nov. Zool. vii : n. spp.
- Throana amynthorialis*, figure, pl. iv, fig. 20, SWINHOE, Cat. Lep. Het. ii.
- Thyas honesta*, larva and pupa, pl. 8, figg. 12, 13, *indiscriminata*, larva and pupa, figg. 10, 11, p. 560, SEMPER, Schmetterl. Philipp. ii.
- Thyatira apicalis*, *flavimargo*, p. 11, *conspicua*, *ornata*, p. 12, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Tornacontia* n. g., p. 49, for *Tarache sutrix* Grote, and *T. megocula* n. sp., California, p. 58, SMITH, Tr. Amer. ent. Soc. xxvii.
- Trichopolia serrata*, Texas, SMITH, p. 479, P. U. S. Mus. xxii, n. sp.
- Trigonophora grumi* renamed *Blepharidia paspa*, PÜNGELER, p. 123, Deutsche ent. Zeitschr. Lep. xiii.
- Triputia baileata*, p. 489, *luxuriosa*, p. 490, N. America, SMITH, P. U. S. Mus. xxii, n. spp.
- Trogacontia ruficeps* Walk. (as *Thermesia*), figure, pl. i, fig. 17, SWINHOE, Cat. Lep. Het. ii.
- Ugia disjungens*, figure, SWINHOE, p. 194, t. c.
- Uncula* n. g. near *Maliattha*, for *Hiccodia herbaria* Swinh., SWINHOE, p. 52, t. c.
- Urbona sublineata* Walk., figure, pl. ii, fig. 19, SWINHOE, t. c.
- Veia homopterooides*, figure, pl. ii, fig. 25, SWINHOE, t. c.
- Xanthia pallidago*, Zeitun, STAUDINGER, p. 377, Deutsche ent. Zeitschr.

- Lep. xii; *X. pulchella*, Vancouver, SMITH, p. 223, Canad. Ent. xxxii : n. spp.
- Xanthoptera lignigera* Walk. (as *Rusicada*), pl. i, fig. 8, *mansueta* Walk. (as *Daona*), fig. 18, figures, SWINHOE, Cat. Lep. Het. ii; *X. maculata*, Philippines, SEMPERI, p. 522, pl. ix, fig. 3, and pl. x, figg. 16, 17, larva and pupa, Schmetterl. Philipp. ii.
- X. cœnogramma*, ?Madagascar, MABILLE, p. 730, Ann. Soc. ent. France lxviii; *X. univittata*, Bismarck Arch., PAGENSTECHER, p. 80, Zoologica xxix : n. spp.
- Xylina*: the North American revised, SMITH, pp. 1-46, pls. i-v, Tr. Amer. ent. Soc. xxvii.
- X. amanda*, p. 24, *emarginata*, *holocinerea*, p. 28, *puella*, p. 30, *winnipeg*, p. 31, *dilatocula*, p. 42, N. America, SMITH, t. c. n. spp.
- Xylophasia fasciata*, p. 68, *submarginata*, p. 69, *chinensis*, p. 70, China, LEECH, Tr. ent. Soc. London 1900, n. spp.
- Zagira strigulata*, Bismarck Arch., PAGENSTECHER, p. 85, pl. ii, fig. 11, Zoologica xxix, n. sp.
- Zethes*; the following species of *Egnasia* of Walk. are referred to *Zethes* and figured, *athemonalis*, pl. iv, fig. 1, *hyalaxalis*, pl. iii, fig. 20, *parsimonialis*, pl. iv, fig. 18, *avusalis*, fig. 10, also *Z. metagona* Walk. (as *Thermesia*), fig. 2, SWINHOE, Cat. Lep. Het. ii.
- Zethes humilis*, Africa or Madagascar, MABILLE, p. 733, Ann. Soc. ent. France lxviii; *Z. lula*, Singapore, SWINHOE, p. 189, pl. iv, fig. 8, Cat. Lep. Het. ii; *Z. mandarina cana*, p. 597, *trilineata*, p. 598, *dentilineata*, p. 599, *saucia*, p. 600, *squamata*, China, *umbrosa*, China, Japan, p. 601, *ingratata*, p. 602, *pulverea*, p. 603, *adusta*, p. 604, China, *parvula*, China, Japan, *ornata*, p. 605, *cinnamomea*, p. 606, *sordidata*, p. 607, *magna*, p. 608, China, LEECH, Tr. ent. Soc. London 1900; *Z. uncinata angulata*, pl. ii, fig. 32, Bismarck Arch., PAGENSTECHER, p. 114, Zoologica xxix; *Z. grisea*, Buru, HOLLAND, p. 571, Nov. Zool. vii : n. spp.

GEOMETRIDÆ, EPIPLEMIDÆ.

[Cf. BARRETT (72), BASTELBERGER (77, 79), BURROWS (204), DIETZE (319), DOGNIN (340, 341), DRUCE (348), DYAR (360), FUCHS (473), HAMPSON (547), HERZ (584), HOLLAND (595), HULST (623, 625, 627), KARSCH (680), KORB (758), LOWER (828, 829), LUCAS (832), MABILLE (843), MEYRICK (906), PAGENSTECHER (975), PETERSEN (993), PROUT (1057), PÜNGELER (1060), REBEL (1074), SCHRÖDER (1163), STAUDINGER (1269, 1270), SWINHOE (1298, 1299), WARREN (1375, 1376).]

British *Geometridæ*, BARRETT (72).

A large number of synonymous notes relating to N. American species, not recorded below, HULST (627).

Anatomy of ♂ genital armature of *Eupithecia innotata*, SCHRÖDER (1163).

Abbotana clemataria, life-history, DYAR, p. 142, Psyche ix.

Abrazus marginata var. n. *confusa*, arctic, STRAND, p. 225, Ent. Nachr. xxvi and Arch. Naturv. Christiania xxii, No. 5, p. 28.

A. eatriada, Chiriqui, DOGNIN, p. 222, Ann. Soc. ent. Belgique xliv, n. sp.

Acidalia aversata var., FUCHS, p. 48, Jahrb. nassau. Ver. iii.

A. metohiensis, Herzegovina, REBEL, p. 451, Verh. Ges. Wien 1; *A. subrufaria*, Algeria, p. 386, *subpurpurata*, pl. vi, fig. 19, Mardin, *sanctaria*, pl. v, fig. 6, p. 387, *sublongaria*, p. 388, JORDAN, *allongaria*, *consociata*, pl. vi, fig. 10, p. 390, Mardin, *substrigaria*, N. E. Siberia, p. 391, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii; *A. subrosearia*, p. 737, *sparsipunctata*, *agrammaria*, Madagascar, *cupida*.

- p. 738, *terrearia*, *rufolutoria*, Madagascar ?, *holobapharia*, Madagascar, p. 739, MABILLE, Ann. Soc. ent. France lxvii; *A. floccosa*, Bismarck Arch., PAGENSTECHER, p. 148, Zoologica xxix; *A. coecita*, p. 140, *vibrata*, *partita*, p. 141, Queensland, LUCAS, P. Soc. Queensland xv; *A. partita*, p. 215, *imitans*, *nubila*, *inficeta*, p. 216, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xliv : n. spp.
- Adelotypa xanthobrunnea* referred to *Limonias (Rhopalocera)*, WARREN, p. 225, Nov. Zool. vii.
- Agathia benedicta*, Bismarck Arch., PAGENSTECHER, p. 152, pl. ii, fig. 39, Zoologica xxix, n. sp.
- Alcis argillacea*, Congo, WARREN, p. 95, Nov. Zool. vii; *A. nigrocuneata*, Sumatra, WARREN, p. 112, t. c.; *A. guttata*, N. America, HULST, p. 219, J. N. York Ent. Soc. viii : n. spp.
- Allophylia invasata* var. n. *perrupta*, WARREN, p. 132, Nov. Zool. vii.
- A. ambusta*, Venezuela, id., p. 131, t. c. n. sp.
- Amaurinia paraviolascens*, Ecuador, DOGNIN, p. 217, Ann. Soc. ent. Belgique xliv; *A. auruda*, Ecuador, DOGNIN, p. 443, t. c. : n. spp.
- Amblurodes* n. g. *Selidoseminæ*, p. 200, for *A. commixta*, n. sp., Ecuador, p. 201, WARREN, Nov. Zool. vii.
- Amelora tetrica*, p. 406, *paronycha*, p. 407, N. S. Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Amphidasis betularius doubledayaria* in Germany, UFFELN, p. 67, Deutsche ent. Zeitschr. Lep. xiii.
- Anteia doddsiana*, Queensland, LUCAS, p. 149, P. Soc. Queensland xv, n. sp.
- Anteois* n. g. for part of *Eois*, p. 146, with *A. mellea*, Brazil, *obliquaria*, Orinoco, *sulphuraria*, Ecuador, p. 147, n. spp., WARREN, Nov. Zool. vii.
- Antiplecta* n. g., *Epiplemidæ* near *Dirades*, for *A. pusilla* n. sp., Dominica, WARREN, p. 121, t. c.
- Anaxa kaluga*, Jaintia Hills, SWINHOE, p. 308, Ann. Nat. Hist. vi, n. sp.
- Anisodes urcearia* var. n. *diffusa*, WARREN, p. 146, Nov. Zool. vii.
- A. raspara*, *spatara*, p. 439, *suberca*, *punctigera*, p. 440, *fastidiosa*, p. 441, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xliv; *A. albipupillata*, S. America, *bipartita*, Colombia, *conferta*, Jamaica, p. 141, *costinotata*, Colombia, *ferruginata*, Ecuador, p. 142, *insigniata*, Brit. Guiana, *lichenea*, Jamaica, *nigropustulata*, Brazil, p. 143, *ocularis*, Venezuela, *spissata*, Demerara, p. 144, *stramineata*, Ecuador, *subpallida*, Brazil, *subcarnearia*, with var. *grisea* Sao Paulo, p. 145, *tenera*, Rio Janeiro, p. 146, WARREN, Nov. Zool. vii : n. spp.
- Anisopera impostor*, Ecuador, *rectilinea*, Venezuela, WARREN, p. 207, Nov. Zool. vii, n. spp.
- Apicia preapicata*, Petropolis, WARREN, p. 208, t. c.; *A. venusta*, Ecuador, DOGNIN, p. 451, Ann. Soc. ent. Belgique xliv : n. spp.
- Aplodes malina* Butl. referred to *Hydata*, WARREN, p. 134, Nov. Zool. vii.
- A. pallida*, Bonaire Island, WARREN, p. 131, t. c. n. sp.
- Aplogompha oppletaria*, Ecuador, WARREN, p. 186, t. c. n. sp.
- Arhostia indecorata*, Simla, WARREN, p. 103, t. c. n. sp.
- Arrhodia fenestrata*, Queensland, LUCAS, p. 145, P. Soc. Queensland xv, n. sp.
- Asellodes*; referred to *Sterrhinae*, characters, WARREN, p. 148, Nov. Zool. vii.
- Asestra albitorrida*, Ecuador, WARREN, p. 208, t. c. n. sp.
- Aspidoptera* n. g. *Monocentriidae*, for *A. navigata*, p. 146, *ambiens*, p. 147, n. spp., Queensland, LUCAS, P. Soc. Queensland xv.
- Aspilates galvaria* var., FUCHS, p. 56, Jahrb. nassau. Ver. liii.
- Astyochia nigrita*, Bolivia, WARREN, p. 187, Nov. Zool. vii, n. sp.
- Ateloptila confusa*, Queensland, WARREN, p. 112, t. c. n. sp.

- Aterpnodes* n. g., p. 208, *Ennominae*, for *A. geminipuncta*, n. sp., Costa Rica, p. 209, WARREN, t. c.
- Atyria subdichroa*, Ecuador, DOGNIN, p. 214, Ann. Soc. ent. Belgique xliv : *A. ? mammillifera*, Ecuador, WARREN, p. 125, Nov. Zool. vii : n. spp.
- Atyriodes parapostica*, Ecuador, DOGNIN, p. 214, Ann. Soc. ent. Belgique xliv, n. sp.
- Arata tenuilinea*, Penang, WARREN, p. 115, Nov. Zool. vii, n. sp.
- Azelina peplaria*, larva, CAUDELL, p. 583, Ent. News Philad. xi.
- A. elmonjensis*, p. 232, *munita*, p. 233, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xliv ; *A. dorsipunctata*, Venezuela, *incompta*, Bolivia, p. 209, *indistincta*, *subochreata*, with var. *nocturna*, p. 210, Colombia, *velutina*, Parana, p. 211, WARREN, Nov. Zool. vii : n. spp.
- Bapta bimaculata* var., FUCHS, p. 51, Jahrb. nassau Ver. liii.
- Bapta perita*, p. 446, *admota*, p. 447, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xliv ; *B. erina*, Brazil, DRUCE, p. 525, Ann. Nat. Hist. v : n. spp.
- Bassodes cemonia*, Jamaica, DRUCE, p. 524, t. c. n. sp.
- Berta vaga* Walk. (as *Thalera*), figure, pl. vi, fig. 8, SWINHOE, Cat. Lep. Het. ii.
- Biston hunii*, hybrids, OBERTHUR (952).
- Boarmia crepuscularia* var. n. *alba*, GAUCKLER, p. 371, Ent. Nachr. xxvi ; *B. acaciaria* larva, pl. xlix, fig. 24, p. 318, FAWCETT, Tr. Zool. Soc. London xv.
- B. tenuisaria*, Jordan, pl. v, fig. 3, *tenietaria*, pl. vi, fig. 1, p. 394, *fascinataria*, fig. 4, p. 395, Algeria, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii ; *B. preclarata*, Centr. Asia, PÜNGELER, pl. ix, fig. 18, p. 297, Deutsche ent. Zeitschr. Lep. xii ; *B. delatina*, Shan States, SWINHOE, p. 308, Ann. Nat. Hist. vi ; *B. acotozonea*, Christmas Is., HAMPSON, p. 71, pl. ix, figg. 4, 15, Monogr. Christmas Island ; *B. submuscaria*, Bismarck Arch., PAGENSTECHER, p. 137, Zoologica xxix : n. spp.
- Brachbasis* n. g. *Epiplemidæ*, for *Decetia rufescens* Butl., SWINHOE, p. 218, Cat. Lep. Het. ii.
- Brephoscotosia* ; characters amended, WARREN, p. 171, Nov. Zool. vii.
- Brochelia subalbida*, Surinam, WARREN, p. 194, t. c. n. sp.
- Broptera ustifumosa* referred to *Cymatophora*, WARREN, p. 196, t. c.
- B. subbrunnea*, Ecuador, WARREN, p. 194, t. c. n. sp.
- Bursada oblongata*, DOREY, SWINHOE, p. 316, Cat. Lep. Het. ii, n. sp.
- Caberodes subochrearia*, New Jersey, HULET, p. 107, Canad. Ent. xxxii, n. sp.
- Calleterra schistacea*, Sarawak, SWINHOE, p. 309, Ann. Nat. Hist. vi, n. sp.
- Callipseustes* n. g. *Selidoseminæ*, p. 201, for *C. parambicola* n. sp., Ecuador, p. 202, WARREN, Nov. Zool. vii.
- Calocalpe rosenbergi*, Ecuador, WARREN, p. 172, t. c. n. sp.
- Calocampe undulata*, life history, DYAR, p. 9, Psyche ix.
- Calyptocome* n. g., type *Acidalia pannaria* Gn., with *C. roseoliva* n. sp., St. Vincent, WARREN, p. 148, Nov. Zool. vii.
- Cambogia versuta*, Walk. (as *Hyria*), figure, pl. v, fig. 23, SWINHOE, Cat. Lep. Het. ii.
- C. muscularia*, Bolivia, DOGNIN, p. 217, Ann. Soc. ent. Belgique xliv ; *C. seria*, p. 442, *acerba*, p. 443, Ecuador, DOGNIN, t. c. : n. spp.
- Campogramma ? fodata*, Ecuador, WARREN, p. 172, Nov. Zool. vii, n. sp.
- Carbia calescens*, figure, pl. v, fig. 15, SWINHOE, Cat. Lep. Het. ii.
- Cartellodes ochrea*, Ecuador, WARREN, p. 212, Nov. Zool. vii, n. sp.
- Cataclysme ? napassa*, Ecuador, DOGNIN, p. 445, Ann. Soc. ent. Belgique xliv, n. sp.
- Certima sericea*, Bogotá, WARREN, p. 212, Nov. Zool. vii, n. sp.
- Chlenias serina*, N. S. Wales, LOWER, p. 36, P. Linn. Soc. N. S. Wales xxv ;

- C. sagittaria*, Queensland, LUCAS, p. 148, P. Soc. Queensland xv : n. spp.
- Choguda perlepidaria*, Queensland, WARREN, p. 112, Nov. Zool. vii, n. sp.
- Cidaria autumnalis* var. n. *constricta*, STRAND, p. 32, Arch. Naturv. Christiania, xxii, No. 5; *C. truncata* var., p. 57, *ferrugata* var., *dilutata* var., p. 58, *lugubrata* var., p. 60, *hastata* var., p. 61, FUCHS, Jahrb. Nassau. Ver. iii; *C. picata* var. n. *albofasciata*, GAUCKLER, p. 371, Ent. Nachr. xxvi; *C. flavicinctata* var. *relegata*, *C. vitalbata* var. *detersata*, PÜNGELER, p. 299, Deutsche ent. Zeitschr. Lep. xii.
- C. variolata*, Algeria, STAUDINGER, p. 399, pl. vi, fig. 2, Deutsche ent. Zeitschr. Lep. xii; *C. l. uncinata*, Centr. Asia, PÜNGELER, pl. iv, fig. 3, p. 121, Deutsche ent. Zeitschr. Lep. xiii; *C. nanula*, Madagascar ?, MABILLE, p. 737, Ann. Soc. ent. France lxviii; *C. sagittatoides*, Bismarck Arch., PAGENSTECHER, p. 144, pl. i, fig. 5, Zoologica xxix; *C. subalbata*, Colombia, *simplex*, Ecuador, DOGNIN, p. 445, Ann. Soc. ent. Belgique xliv : n. spp.
- Cidariophanes indentata*, p. 202, *perrubrescens*, p. 203, Bolivia, WARREN, Nov. Zool. vii; *C. incondita*, Ecuador, DOGNIN, p. 449, Ann. Soc. ent. Belgique xliv : n. spp.
- Cimelia olga*, Transcaucasus, STAUDINGER, p. 398, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Cirsodes mosticana*, Ecuador, DOGNIN, p. 226, Ann. Soc. ent. Belgique xliv, n. sp.
- Clytia optima*, Bolivia, DOGNIN, p. 226, t. c. n. sp.
- Cnemodes dentilinea*, Ecuador, WARREN, p. 149, Nov. Zool. vii, n. sp.
- Cneophora* n. g. type *Azelina griseata* Missn., WARREN, p. 212, t. c.
- Cœluronima* n. g., *Epiplemidæ*, for *C. subfasciata* n. sp., Ecuador, WARREN, p. 122, t. c.
- Cœnocalpe œnonympatha*, California, HULST, p. 104, Canad. Ent. xxxii, n. sp.
- Comostola dyakaria*, Walk. (as *Eucrostis*), figure, pl. vi, fig. 9, SWINHOE, Cat. Lep. Het. ii.
- Craspedia furfurata* var. n. *subcarnea*, WARREN, p. 104, Nov. Zool. vii; *C. usticinctaria* Walk. (as *Acidalia*), fig., pl. v, fig. 24, SWINHOE, Cat. Lep. Het. ii.
- C. planipennis*, Sierra Leone, *rufinubes*, Unyoro, WARREN, p. 91, Nov. Zool. vii; *C. compressaria*, Bali, p. 103, *cretata*, Sula Mangoli, *margaritaria*, Celebes, *rufimixtaria*, Tenimber Islands, p. 104, *undilinea*, Lifu, p. 105, WARREN, t. c.; *C. taciturna*, Ecuador, DOGNIN, p. 444, Ann. Soc. ent. Belgique xliv; *C. approbata*, Carupano, *chlorochrea*, Parana, p. 149, *consobrinata*, Orinoco, *flexistrigata*, Brazil, *rasa*, Venezuela, p. 150, *rostrilinea*, Colombia, *unicornata*, Brazil, p. 151, *uniformata*, Trinidad, *viridipunctata*, Brazil, p. 152, WARREN, Nov. Zool. vii : n. spp.
- Craspedosis norbeata*, Buru, p. 312, *morotai*, MORTY, p. 313, SWINHOE, Cat. Lep. Het. ii, n. spp.
- Cratoptera vilaria* = (*Cimicodes primularia*), var. n. *obscurata*, WARREN, p. 213, Nov. Zool. vii.
- Cryptostyla* n. g., type *Acidalia quinquelineata* Dogn., WARREN, p. 152, t. c.
- Cryptoloba etaina*, Khasia Hills, SWINHOE, p. 310, Ann. Nat. Hist. vi, n. sp.
- Cusiala bistonaria* Walk. (as *Boarmia*), pl. v, fig. 5, *de cursaria*, fig. 3, figg., SWINHOE, Cat. Lep. Het. ii.
- Cyclomia costipuncta* var. n. *ocellata*, WARREN, p. 213, Nov. Zool. vii.
- C. alternata*, Bahamas, *bellula*, Carupano, p. 213, *fulvimacula*, Ecuador, *rubida*, Rio Janeiro, p. 214, WARREN, t. c. n. spp.
- Cyllopoda attenuata*, Sao Paulo, *nani pennis*, Ecuador, WARREN, p. 125, Nov. Zool. vii, n. spp.

- Cymatophora evagaria*, Ontario, HULST, p. 106, Canad. Ent. xxxii; *C. virginalis*, *deleta*, N. America, HULST, p. 218, J. N. York Ent. Soc. viii; *C. apicalis*, Parana, *C. commaculata*, Ecuador, p. 195, *C. ochracea*, Panama, *paraphiata*, Brit. Guiana, p. 196, WARREN, Nov. Zool. vii : n. spp.
- Cyphopora* n. g., *Cyllopodina*, p. 125, for *C. dubia* n. sp., Ecuador, p. 126, WARREN, t. c.
- Cysteophora* n. g., for *C. pervertipennis* n. sp., Florida, HULST, p. 215, J. N. York Ent. Soc. viii.
- Darna marginata*, Venezuela, WARREN, p. 126, Nov. Zool. vii, n. sp.
- Decetia dichromata*, fig., pl. v, fig. 1, SWINHOE, Cat. Lep. Het. ii.
- Deilinia sericea* referred to *Nipteria*, WARREN, p. 190, Nov. Zool. vii.
- D. solumata*, Winnipeg, HULST, p. 217, J. N. York Ent. Soc. viii, n. sp.
- Deinoptila* n. g., type *Cidaria penicula* Dogn., WARREN, p. 172, Nov. Zool. vii.
- Diastictis epiderma*, S. Australia, LOWER, p. 405, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Dichorda* n. g., type *Geometra iridaria* Gu., with *D. allineata* n. sp., Venezuela, WARREN, p. 132, Nov. Zool. vii.
- Dichotrepisia* merged in *Stenele*, WARREN, p. 192, t. c.
- Dichromatopodia deflexa*, Venezuela, WARREN, p. 152, t. c. n. sp.
- Dichromodes steropias* var. n. *neistriga*, WARREN, p. 101, t. c.
- D. subdentata*, fig., pl. v, fig. 9, SWINHOE, Cat. Lep. Het. ii.
- D. infans*, Jamaica, WARREN, p. 122, Nov. Zool. vii, n. sp.
- Dithecodes* n. g. *Geometrina*, for *D. erasa* n. sp., Japan, WARREN, p. 102, t. c.
- Dolichopyge* n. g., *Hydriomenina*, for *D. bifasciata* n. sp., Parana, WARREN, p. 173, t. c.
- Drucia* n. g. for *Racheospila asmura* Druce and *D. delphinata* n. sp., Sao Paulo, WARREN, p. 133, t. c.
- Dulioptyle agitata* var. n. *diluta*, WARREN, p. 113, t. c.
- Dysephyra errabunda*, noverca, p. 441, *subrosea*, p. 442, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xliv, n. spp.
- Dysephania magnifica*, Queensland, SWINHOE, p. 377, Cat. Lep. Het. ii, n. sp.
- Ectropidia exprimata* Walk. (as *Acidalia*), fig., pl. v, fig. 11, SWINHOE, t. c.
- E. fimbripedata*, Perak, WARREN, p. 113, Nov. Zool. vii, n. sp.
- Ectropis subrugata* Walk. (as *Tephrosia*), pl. v, fig. 12, *decurearia* Walk. (as *Tephrosia*), fig. 21, figg., SWINHOE, Cat. Lep. Het. ii.
- E. hieroglyphica*, p. 33, *plectroneura*, p. 34, New South Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Egea pellucida*, Altai, STAUDINGER, p. 396, Deutsche ent. Zeitschr. Lep. xli, n. sp.
- Enconista minosaria*, variation, JOANNIS, pp. 189-191, cuts, Bull. Soc. ent. France 1900.
- Eois*; erroneous application, WARREN, p. 146, Nov. Zool. vii; *E. suavata*, life-history, DYAR, p. 106, Psyche ix.
- E. macrostyla*, E. Africa, *sublimbaria*, S. Africa, WARREN, p. 92, Nov. Zool. vii; *E. carneofasciata*, Java, p. 105, *ferrilinea*, *fucosa*, Queensland, *glabripennis*, Java, p. 106, WARREN, t. c.; *E. crossii*, *purpurascens*, Florida, HULST, p. 105, Canad. Ent. xxxii; *E. suavata*, *micropterata*, Florida, HULST, p. 217, J. N. York Ent. Soc. viii : n. spp.
- Epicimelia* n. g. for *E. theresiae* n. sp., pl. vii, figg. 5, 6, n. sp., Centr. Asia, KORB, p. 301, Deutsche ent. Zeitschr. Lep. xli.
- Epicosymbia conspersa*, Sumba, WARREN, p. 107, Nov. Zool. vii, n. sp.
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- E. basipuncta, bellissima*, Penang, WARREN, p. 101, Nov. Zool. vii; *E. kohistaria*, Andaman Islands, SWINHOE, p. 307, Ann. Nat. Hist. vi; *E. lacteata*, p. 577, *buruana*, p. 578, Buru, HOLLAND, Nov. Zool. vii; *E. rufula*, Ecuador, WARREN, p. 123, Nov. Zool. vii : n. spp.
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- Euacidalia germana*, with var. *obscura*, Jamaica, WARREN, p. 153, Nov. Zool. vii, n. sp.
- Eurestus* n. g. for *E. nobilitans, patrocinatus*, n. spp., Queensland, LUCAS, p. 142, P. Soc. Queensland xv.
- Euchlæna abnormalis*, Winnipeg, HULST, p. 220, J. N. York. Ent. Soc. viii, n. sp.
- Euchlæna serrata*, life-history, DYAR, pp. 130–132, Psyche ix.
- Euchloris aurigera*, Bismarck Arch., PAGENSTECHER, p. 155, Zoologica xxix, n. sp.
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- Eucrostis rufostellata*, p. 740, *rufocellata, lilliputaria*, p. 741, Madagascar, MABILLE, Ann. Soc. ent. France lxviii, n. spp.
- Eudule circunducta*, Ecuador, WARREN, p. 185, Nov. Zool. vii, n. sp.
- Euephyra subsimilis*, Ecuador, WARREN, p. 153, t. c. n. sp.
- Eugonobapta brunneolineata*, Florida, HULST, p. 218, J. N. York. Ent. Soc. viii, n. sp.
- Euperizoma* n. g. near *Perizoma*, for *E. nubicincta*, n. sp., Costa Rica, WARREN, p. 177, Nov. Zool. vii.
- Eupithecia carpophagata?*, life-history, pp. 95–101, pl. i, *E. undata* Fr.=*(scriptaria* H.-S.), p. 101, DIETZE, Deutsche ent. Zeitschr. Lep. xiii; *E. silenata* var., p. 63, *chlœrata* var., p. 65, *exiguata* food-habits, p. 66, FUCHS, Jahrb. Nassau. Ver. liii; *E. ericeata, millierata* and allies, synonymy, BASTELBERGER, pp. 129, etc., Illustr. Zeitschr. Ent. v; *E. rectangulata*, larval habits, BROWN, p. xi, Pr.-verb. Soc. Bordeaux iv.
- E. brunneata*, Mardin, STAUDINGER, pl. v, fig. 11, p. 400, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Eusarca subfasciata* var. n. *crocea*, WARREN, p. 215, Nov. Zool. vii.
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- Ira subcostata*, Ecuador, WARREN, p. 217, t. c.; *I. marmorata*, p. 227, *subapicalis*, p. 228, Ecuador, DOGNIN, Ann. Soc. ent. Belgique xliv : n. spp.
- Ischnopteris chryses* var. n. *dispar*, WARREN, p. 203, Nov. Zool. vii.
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- Lathochlora* n. g., *Geometrinae*, p. 90, for *L. inornata* n. sp., Niger, p. 91, WARREN, Nov. Zool. vii.
- Lepiodes exilis*, Venezuela, WARREN, p. 197, t. c. n. sp.
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- Leucovenia* n. g. *Astheninae*, for *L. lactea* n. sp., E. Africa, WARREN, p. 94, t. c.
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- Lobopola* n. g., type *Boarmia cimarrona* Dogn., WARREN, p. 203, Nov. Zool. vii.
- Longipalpa* n. g. near *Abrahas*, for *L. circumducta*, n. sp., Bismarck Arch., PAGENSTECHER, p. 143, Zoologica xxix.
- Lophochlora cristifera* Walk. (as *Thalera*), fig., pl. vi, fig. 5, SWINHOE, Cat. Lep. Het. ii.
- Lophocrita undifera* Walk. (as *Thalera*), fig., pl. vi, fig. 10, SWINHOE, t. c.
- Loxaspilates torcida*, Ecuador, DOGNIN, p. 449, Ann. Soc. ent. Belgique xliv, n. sp.
- Luxaria euchlorata*, Buru, HOLLAND, p. 579, Nov. Zool. vii, n. sp.
- Lygris populata* var. n. *lutea*, STRAND, p. 31, Arch. Naturv. Christiania xxii, No. 5, and p. 225, Ent. Nachr. xxvi.
- Macaria albogrisearia*, Madagascar ?, MABILLE, p. 736, Ann. Soc. ent. France lxviii; *M. albapicaria*, Buru, HOLLAND, p. 579, Nov. Zool. vii; *M. atomaria*, Bismarck Arch., PAGENSTECHER, p. 132, Zoologica xxix : n. spp.
- Macroneurodes* n. g. *Cyllopodinae*, for *M. albimacula*, n. sp., Bogotá, WARREN, p. 127, Nov. Zool. vii.
- Maidana* n. g. for *Macaria tetragonata* Walk., SWINHOE, p. 280, Cat. Lep. Het. ii.
- Mecoceras nitocris*, life-history, DYAR, p. 69, Psyche ix.
- Melinodes furva*, Bogotá, WARREN, p. 218, Nov. Zool. vii, n. sp.
- Mesoleuca niveifasciata*, N. America, HULST, p. 216, J. N. York Ent. Soc. viii, n. sp.
- Metrocampa margaritata*, synonymy, PROUT, p. 180, Ent. Rec. xii.
- Microbiston tartaricus*, figure, STAUDINGER, pl. vii, fig. 12, Deutsche ent. Zeitschr. Lep. xii.
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- M. olivata*, with var. *terrosa*, Bolivia, DOGNIN, p. 227, Ann. Soc. ent. Belgique xliv; *M. insolita*, Colombia, WARREN, p. 218, Nov. Zool. vii : n. spp.
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- Thalassodes subreticulata*, Madagascar, MABILLE, p. 740, Ann. Soc. ent. France lxviii, n. sp.
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- Thalera ostracites*, Madagascar, KARSCH, p. 370, Ent. Nachr. xxvi ; *T. pudica*, Bismarck Arch., PAGENSTECHER, p. 157, pl. ii, fig. 7, Zoologica xxix : n. spp.
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- Camptochilus sinuosus*, pl. b, fig. 24, *furcifera*, fig. 4, figg., HAMPSON, p. 229, J. Bombay Soc. xiii.
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- Diplotyla javanalis*, p. 278, pl. xv, fig. 17, *quadralis*, p. 280, Java, SNELLEN, Tijdschr. Ent. xlivi; *D. atrata*, Bismarck Arch., PAGENSTECHER, p. 182, pl. i, fig. 15, Zoologica xxix : n. spp.
- Diptychophora sinuialis*, Armenia, p. 372, *strigatalis*, Amurland, pl. iii, fig. 23, p. 373, HAMPSON, Tr. ent. Soc. London 1900; *D. fuscobasella*, Java, SNELLEN, p. 301, pl. xvii, fig. 7, Tijdschr. Ent. xlivi : n. spp.
- Dracanura versicolor*, Bismarck Arch., PAGENSTECHER, p. 177, pl. ii, fig. 36, Zoologica xxix, n. sp.
- Dyaria*; referred to *Pyralidae*, nervuration, DYAR, p. 284, Canad. Ent. xxxii.
- Dysodia fenestratella*, E. Africa, WARREN, p. 90, Nov. Zool. vii; *D. bipuncta*, Perak, *lævis*, N. India, WARREN, p. 100, t. c. : n. spp.
- Edita icarusalis*, fig., pl. vi, fig. 21, SWINHOE, Cat. Lep. Het. ii.
- Endotricha drancesalis* Walk. (as *Hydrocampus*), fig., pl. vii, fig. 18, SWINHOE, t. c.
- E. jordana*, Syria, HAMPSON, p. 377, Tr. ent. Soc. London 1900; *E. erythralis*, Madagascar, MABILLE, p. 742, Ann. Soc. ent. France lxviii; *E. listeri*, pl. ix, fig. 3, p. 73, HAMPSON, Monogr. Christmas Island; *E. buralis*, Buru, HOLLAND, p. 582, Nov. Zool. vii; *E. gregalis*, Bismarck Arch., PAGENSTECHER, p. 168, Zoologica xxix : n. spp.
- Entephria tylostegealis*, Amurland, HAMPSON, pl. iii, fig. 6, p. 385, Tr. ent. Soc. London 1900; *E. 7-notata*, Madagascar, MABILLE, p. 743, Ann. Soc. ent. France lxviii; *E. sarumalis*, Buru, HOLLAND, p. 585, Nov. Zool. vii; *E. fulvomarginalis*, Bismarck Arch., PAGENSTECHER, p. 181, Zoologica xxix : n. spp.
- Eoophyla* n. g. for *Cataclysta peribocalis* Walk. and *E. waigoalis* n. sp., Waigiu, pl. vi, fig. 29, p. 442, SWINHOE, Cat. Lep. Het. ii.
- Epana* n. g. *Pyralidinae*, p. 245, for *E. elephantinalis* n. sp., Cameroons, p. 246, KARSCH, Ent. Nachr. xxvi.
- Ephestia carcella*, natural history, ZEHNTNER, pp. 24–26, pl. i, figg. 14–16, Plantenluizen x.
- E. scotella*, Christmas Is., HAMPSON, p. 72, pl. ix, fig. 13, Monogr. Christmas Island, n. sp.
- Ephestiodes nigrella*, California, HULST, p. 224, J. N. York Ent. Soc. viii, n. sp.
- Erilia metaleucalis* Walk. (as *Bradina*), figure, pl. vi, fig. 27, SWINHOE, Cat. Lep. Het. ii.
- Eromene virescens*, Arizona, HULST, p. 225, J. N. York. Ent. Soc. viii, n. sp.
- Erupa gigantea*, *gyges*, *cluaca*, *rhætia*, Colombia, DRUCE, p. 526, Ann. Nat. Hist. v, n. spp.
- Ethopia roseolinea*, figure, SWINHOE, p. 416, Cat. Lep. Het. ii.
- Eufernaldia* n. g. *Crambidae*, for *E. argenteonervella* n. sp., Arizona, HULST, p. 224, J. N. York Ent. Soc. viii.
- Eugauria* n. g. near *Cataclysta*, p. 290, for *E. compactalis* n. sp., Java, p. 291, pl. xvi, fig. 10, SNELLEN, Tijdschr. Ent. xlivi.
- Eurycreon eversmanni* = (*Spilodes bicoloralis* Wart.), SNELLEN, p. 270, t. c.
- Eurythmia coloradella*, N. America, HULST, p. 175, Canad. Ent. xxxii, n. sp.
- Eusabena* n. g. near *Pachynoa*, p. 271, for *E. setinialis* n. sp., Borneo, p. 272, pl. xv, figg. 4, 5, SNELLEN, Tijdschr. Ent. xlivi.
- Eustixia pupula*, larva, DYAR, p. 155, Canad. Ent. xxxii.
- Eutrichotis* n. g. for *Zebronia abraxalis* Walk., SWINHOE, p. 453, Cat. Lep. Het. ii.
- Eusophera inornatella*, New Jersey, HULST, p. 173, Canad. Ent. xxxii, n. sp.
- Evergestis lichenalis*, Centr. Asia, pl. iii, fig. 20, p. 387, HAMPSON, Tr. ent. Soc. London 1900, n. sp.

- Galadra rhomboidata*, figure, pl. vii, fig. 6, SWINHOE, Cat. Lep. Het. ii.
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Glyphandra n. g. *Hydrocampinae*, for *G. biincisalis* n. sp., W. Africa, KARSCH, p. 249, t. c.
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Goniorhynchus guilielmalis, Buru, HOLLAND, p. 587, Nov. Zool. vii, n. sp.
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Heterographis arizonella, N. America, HULST, p. 222, J. N. York Ent. Soc. viii, n. sp.
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Honora fumosella, N. America, HULST, p. 175, Canad. Ent. xxxii; *H. dulciella*, Florida, *cinereella*, *luteella*, Arizona, HULST, p. 223, J. N. York Ent. Soc. viii : n. spp.
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H. lipocosmala, Java, SNELLEN, p. 286, pl. xvi, figg. 4, 5, Tijdschr. Ent. xlivi, n. sp.
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- Margaronia phytonalis* Walk. (as *Botys*), figure, pl. viii, fig. 10, SWINHOE, Cat. Lep. Het. ii.
- Maricopa albocostella*, N. America, HULST, p. 176, Canad. Ent. xxxii, n. sp.
- Meca* n. g. *Pyralidina* near *Tegulifera*, for *M. astralis* n. sp., W. Africa, KARSCH, p. 372, Ent. Nachr. xxvi.
- Megasis cinctella*, California, HULST, p. 172, Canad. Ent. xxxii, n. sp.
- Melissoblaptes rufovenalis*, characters, SNELLEN, p. 307, Tijdschr. Ent. xlili; *M. oblitterosa* Walk. (as *Bapara*), figure, pl. vii, fig. 2, SWINHOE, Cat. Lep. Het. ii.
- M. eucheliellus*, Java, SNELLEN, p. 308, pl. xvii, fig. 9, Tijdschr. Ent. xlili; *M. burellus*, Buru, HOLLAND, p. 581, Nov. Zool. vii : n. spp.
- Melitara junctolineella*, N. America, HULST, p. 173, Canad. Ent. xxxii, n. sp.
- Metasia albicostalis*, p. 392, *sancta*, p. 393, Syria, HAMPSON, Tr. ent. Soc. London 1900, n. spp.
- Metocis vorax*, Congo, in nest of *Dasychira goodi*, JOANNIS, p. 282, Bull. Mus. Paris 1900, n. sp.
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- Midila halia*, Colombia, DRUCE, p. 525, Ann. Nat. Hist. v, n. sp.
- Mineola scitulella*, *rubescensella*, N. America, HULST, p. 169, Canad. Ent. xxxii, n. sp.
- Mixophila apicalis*, Bismarck Arch., PAGENSTECHER, p. 172, Zoologica xxix, n. sp.
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- Myelois dulciella*, Florida, HULST, p. 176, Canad. Ent. xxxii, n. sp.
- Nacoleia marionalis*, figure, pl. vii, fig. 11, SWINHOE, Cat. Lep. Het. ii.
- N. dnopheralis*, Madagascar, MABILLE, p. 745, Ann. Soc. ent. France lxviii, n. sp.
- Nephopteryx pirivorella*, Japan, MATSUMURA, p. 193, Ent. Nachr. xxvi;
- N. nigrostriatella*, *bistriella*, *violetta*, Bismarck Arch., PAGENSTECHER, Zoologica xxix; *N. modestella*, Massachusetts, HULST, p. 170, Canad. Ent. xxxii : n. spp.
- Neoschænobia* n. g. *Schaenobia*, for *N. testacealis* n. sp., Amurland, HAMPSON, p. 374, Tr. ent. Soc. London 1900.
- Noctuelia anemalis*, Algeria, *arcuatalis*, Samarkand, pl. iii, fig. 28, HAMPSON, p. 400, t. c.; *N. togoalis*, W. Africa, KARSCH, p. 377, Ent. Nachr. xxvi : n. spp.
- Nomophila noctuella* var., FUCHS, p. 72, Jahrb. Nassau. Ver. liii.
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- Œdematarcha* n. g. for *Botys xipharesalis* Walk., SWINHOE, p. 476, pl. viii, fig. 30, t. c.
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- O. spiniferalis*, Centr. Asia, STAUDINGER, p. 347, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Orphnophanes strigatalis*, Bismarck Arch., PAGENSTECHER, p. 178, pl. i, fig. 16, Zoologica xxix, n. sp.

- Pachyzancla atropunctalis*, *griseolineata*, Madagascar, MABILLE, p. 747, Ann. Soc. ent. France lxviii, n. spp.
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- Paredra rigidalis*, Java, SNELLEN, p. 265, pl. xv, fig. 1, Tijdschr. Ent. xlivi, n. sp.
- Parthenodes sutschana*, Amurland, HAMPSON, p. 384, Tr. ent. Soc. London 1900, n. sp.
- Parudea* n. g. *Crocidophora* group, for *P. fimbriata* n. sp., N. China, pl. viii, fig. 34, SWINHOE, p. 523, Cat. Lep. Het. ii.
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- Pelina trilinealis* Walk. (as *Zebronia*), figure, pl. vii, fig. 10, SWINHOE, Cat. Lep. Het. ii.
- Peoria albidella*, California, HULST, p. 175, Canad. Ent. xxxii, n. sp.
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- Phryganodes*; characters and synonymous notes of W. African, KARSCH, pp. 375-377, Ent. Nachr. xxvi.
- P. autongilensis*, Madagascar, MABILLE, p. 744, Ann. Soc. ent. France lxviii; *P. baratalis*, Buru, HOLLAND, p. 586, Nov. Zool. vii : n. spp.
- Piletocera illectalis*, pl. viii, fig. 21, *latalis*, pl. vii, fig. 15, *basalis*, fig. 25, *tellesalis*, pl. viii, fig. 14, *lycopusalis*, pl. vii, fig. 23, *zebrinalis*, fig. 13, figures, SWINHOE, Cat. Lep. Het. ii.
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- Sacada decora*, figure, pl. vi, fig. 15, SWINHOE, Cat. Lep. Het. ii.
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- Salma sagarisalis* Walk. (as *Locastrum*), figure, pl. vi, fig. 23, SWINHOE, Cat. Lep. Het. ii.
- Sarasota* n. g. near *Myelois*, for *S. plumigerella* n. sp., Florida, HULST, p. 222, J. N. York Ent. Soc. viii.
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- S. susanae*, N. S. Wales, LOWER, p. 38, P. Linn. Soc. N. S. Wales xxv; *S. mesogramma*, N. S. Wales, LOWER, p. 408, t. c. : n. spp.
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- Strepsinoma crassusalis* Walk. (as *Cataclysta*), figure, pl. vii, fig. 14, SWINHOE, Cat. Lep. Het. ii.
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- Sylora* n. g. for *Sisyphora cirralis* Sw., SWINHOE, p. 472, Cat. Lep. Het. ii.
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- Talis menetriesi*, pl. iii, fig. 13, p. 373, *pallidalis*, fig. 21, p. 374, Centr. Asia, HAMPSON, t. c.; *T. chamyella*, Thian Schan, STAUDINGER, p. 346, Deutsche ent. Zeitschr. Lep. xii : n. spp.
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- Tegostoma paralis*, Turkestan, p. 391, *albizonalis*, Armenia, p. 400, HAMPSON, Tr. ent. Soc. London 1900, n. spp.
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- Tyspanodes exathesalis*, figure, pl. vi, fig. 16, SWINHOE, Cat. Lep. Het. ii.
- Uliocome* n. g. for *Margaronia diaphanalalis* Walk., SWINHOE, p. 472, t. c.
- Ulopeza innotalis*, W. Africa, KARSCH, p. 374, Ent. Nachr. xxvi; *U. crocifrontalis*, Madagascar, MABILLE, p. 744, Ann. Soc. ent. France lxxvii : n. spp.
- Ulotricha algerialis*, Biskra, HAMPSON, pl. iii, fig. 18, p. 377, Tr. ent. Soc. London 1900, n. sp.
- Urula* n. g. *Phycitidae*, for *U. incongruella* n. sp., California, HULST, p. 175, Canad. Ent. xxxii.
- Viteesa hieratica*, Borneo, SWINHOE, p. 430, pl. vi, fig. 22, Cat. Lep. Het. ii; *V. sarunensis*, Buru, HOLLAND, p. 582, Nov. Zool. vii : n. spp.
- Zeuzerodes argentistriata*, Venezuela, WARREN, p. 121, t. c. n. sp.
- Zinckenia nigerrimalis*, Christmas Is., HAMPSON, p. 73, pl. ix, fig. 10, Monogr. Christmas Island, n. sp.
- Zophodia epischnioides, fuscatella*, N. America, HULST, p. 173, Canad. Ent. xxxii, n. spp.

TORTRICIDÆ.

[Cf. BUCKLER (191), DYAR (360), JOANNIS (661), KENNEL (690), LOWER (829), MATSUMURA (867), MABILLE (843), PAGENSTECHER (975), PETERSSEN (993), REUTER (1104), STAUDINGER (1269), STITZ (1285), WALSINGHAM & DURRANT (1298), WALSINGHAM (1365, 1366, 1367, 1370).]

- Revision of nomenclature of *Microlepidoptera* continued, WALSINGHAM & DURRANT, Ent. Mag. xxxvi, pp. 4 etc.
- Finland *Tortricidae*, REUTER (1104).
- The male genitalia of *Tortrix viridana*, STITZ (1285).
- Idoxophyes fasciata*, E. Asia, WALSINGHAM, p. 482, Ann. Nat. Hist. v, n. sp.
- Anatropia pentacosma*, S. Australia, LOWER, p. 409, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Ancylis latipennis*, Japan, p. 439, *mandarinana*, China, etc., p. 440. WALSINGHAM, Ann. Nat. Hist. vi, n. spp.

- Anomalopteryx* n. g. *Epiblemidæ* for *A. xylinana* n. sp., Amur, pl. v, figg. 33–35, KENNEL, p. 157, Deutsche ent. Zeitschr. Lep. xiii.
- Argyroloce basipunctana*, *lacteifacies*, p. 236, *auricristana*, *geminata*, p. 237, Japan, *A. ? catapitoma*, China, p. 239, *inornata*, p. 240, *major*, *borata*, p. 241, *humeralis*, p. 242, Japan, WALSINGHAM, Ann. Nat. Hist. vi, n. spp.
- Argyroloce dimidiata* Cl. = (*schreberiana* L.), WALSINGHAM, p. 235, t. c.
- Archips luteostanus* Chr. = (*gigantana* Kennel), WALSINGHAM, p. 443, t. c.
- A. inornatus*, Corea, p. 442, WALSINGHAM, Ann. Nat. Hist. vi; *A. ? socotranus*, Sokotra, WALSINGHAM, p. 7, Bull. Liverp. Mus. iii; *A. ? longicellanus*, Japan, p. 378, *asiaticus*, p. 380, *breviplicanus*, Corea, *adumbratus*, p. 382, *fuscocupreanus imitor*, p. 384, Japan, WALSINGHAM, Ann. Nat. Hist. v; *A. mimicus*, India, WALSINGHAM, p. 573, Swinhoe, Cat. Lep. Het. ii : n. spp.
- Atelodora agramma*, S. Australia, LOWER, p. 408, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Atychia fasciata*, Thian Schan, pl. vii, fig. 10, p. 349, *fallax*, Fergana, p. 350, *radiolata*, Saisan, p. 351, STAUDINGER, Deutsche ent. Zeitschr. Lep. xii, n. sp.
- Bactra roseana*, Japan, WALSINGHAM, p. 334, Ann. Nat. Hist. vi; *B. punctistrigana*, *distictana*, Madagascar, MABILLE, p. 751, Ann. Soc. ent. France lxviii : n. spp.
- Batodes angustiorana*, larval food, BANKES, p. 9, Ent. Mag. xxxvi.
- Brachmia medjella*, Alps, CHRÉTIEN, p. 191, Bull. Soc. ent. France 1900, n. sp.
- Brachygonia* n. g. near *Tortrix*, for *B. angulicostana*, n. sp., Japan, WALSINGHAM, p. 464, Ann. Nat. Hist. v.
- Cacoecia gigantana*, Askold, KENNEL, p. 127, pl. v, fig. 2, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Caenognosis* n. g. near *Epalziphora*, for *C. incisa*, n. sp., Christmas Is., WALSINGHAM, p. 79, Monogr. Christmas Island.
- Capua Steph.* = (*Homona* Walk.), WALSINGHAM, p. 575, Swinhoe, Cat. Lep. Het. ii.
- Carposina sasakii*, Japan, MATSUMURA, p. 198, Ent. Nachr. xxvi; *C. niponensis*, Japan, WALSINGHAM, p. 121, Ann. Nat. Hist. vi : n. spp.
- Cochylis blandana* (Ev. as *Sciaphila*) = (*punctulatana* Kenn.), KENNEL, p. 306, Deutsche ent. Zeitschr. Lep. xii.
- Conchyliis helvolana* n. n. for *dilutana* K. nec Wals., KENNEL, p. 159, Deutsche ent. Zeitschr. Lep. xiii.
- C. subobscurana*, Puli Hatum, pl. v, fig. 5, p. 129, *luteopictana*, Shahkuh, fig. 6, *prangana*, Caucasus, fig. 7, p. 130, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *C. unicolorana*, Madagascar, MABILLE, p. 750, Ann. Soc. ent. France lxviii; *C. vanillana*, Réunion, JOANNIS, p. 263, Bull. Soc. ent. France 1900 : n. spp.
- Crocidozema demutata*, Japan, WALSINGHAM, p. 441, Ann. Nat. Hist. vi, n. sp.
- Cryptasasma* n. g. for *Penthina lugubris* F. & R., WALSINGHAM, p. 462, Ann. Nat. Hist. v.
- Cryptophlebia* ? *socotrensis*, Sokotra, WALSINGHAM, p. 6, Bull. Liverp. Mus. iii, n. sp.
- Dichelia praecana*, Witim, KENNEL, p. 125, pl. v, fig. 1, Deutsche ent. Zeitschr. Lep. xiii, n. sp.
- Doloploca præviella* Ersch., characters, fig., KENNEL, p. 128, pl. v, fig. 4, t. c.
- D. lineata*, Palestine, WALSINGHAM, p. 462, Ann. Nat. Hist. v, n. sp.
- Dudua hesperialis* Walk., characters, WALSINGHAM, p. 134, op. cit. vi.
- Enarmonia infasta*, p. 438, *cristata*, p. 439, Japan, WALSINGHAM, t. c. n. spp.

- Epagoche angustilineata*, *minuta*, p. 484, *E. ? calvicaput*, p. 485, Japan, WALSINGHAM, Ann. Nat. Hist. v, n. spp.
- Epagoche halysideta*, Christmas Is., WALSINGHAM, p. 78, Monogr. Christmas Island, n. sp.
- Epiblema subterminana* Ersch., characters, fig., KENNEL, p. 150, pl. v, fig. 26, Deutsche ent. Zeitschr. Lep. xiii.
- E. ravana*, pl. v, fig. 27, p. 151, *muculiferana*, fig. 28, p. 152, Guberli, KENNEL, t. c. n. spp.
- Eucelis vulnerata*, Tenasserim, WALSINGHAM, p. 571, Swinhoe, Cat. Lep. Het. ii; *E. ? falcana*, *E. ochreocervina*, p. 407, *E. ? dinia*, p. 408, Japan, WALSINGHAM, Ann. Nat. Hist. vi : n. spp.
- Eucouma pica*, p. 337, *pryerana*, p. 338, *E. ? macrorris*, p. 339, *E. insconspicua*, p. 340, Japan, WALSINGHAM, Ann. Nat. Hist. vi, n. spp.
- Euxanthis romanovi*, Thian Chan, pl. v, fig. 8, p. 131, *taganrogiana*, Taganrog, fig. 9, p. 132, *perturbatana*, Guberli, fig. 10, p. 134, KENNEL, Deutsche ent. Zeitschr. Lep. xiii, n. spp.
- Exartema mori*, Japan, MATSUMURA, p. 196, Ent. Nachr. xxvi; *E. castaneum*, p. 124, *velutinum*, p. 125, Corea, *japonicum*, *pryeranum*, p. 126, Japan, WALSINGHAM, Ann. Nat. Hist. vi : n. spp.
- Grapholita tricuneana*, Caucasus, pl. v, fig. 30, p. 154, *recreantana*, Amur, fig. 31, p. 155, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *G. atrana*, Madagascar, MABILLE, p. 751, Ann. Soc. ent. Franco lxviii; *G. glyciniarella*, Japan, MATSUMURA, p. 197, Ent. Nachr. xxvi; *G. tristriatana*, *subsimilana*, p. 224, *speciosana*, p. 225, Bismarck Arch., PAGENSTECHER, Zoologica xxix : n. spp.
- Hendecaneura* n. g., p. 401, for *H. impar*, p. 402, *H. ? cervinum*, *apicipunctum*, p. 403, n. spp., Japan, WALSINGHAM, Ann. Nat. Hist. vi.
- Homona* Walk. cf. *Capua*.
- Hysterosia*; synonymy and composition, WALSINGHAM, p. 445, Ann. Nat. Hist. vi.
- H. syriaca*, p. 448, *decipiens*, Asiatic Turkey, *coreana*, Corea, p. 447, WALSINGHAM, t. c.; *H. (Idiographis) unionana*, Caucasus, KENNEL, p. 135, pl. v, fig. 11, Deutsche ent. Zeitschr. Lep. xiii : n. spp.
- Hystrichoscelus* n. g. near *Helictophanes*, p. 335, for *H. spathanum* n. sp., Japan, p. 336, WALSINGHAM, Ann. Nat. Hist. vi.
- Laspeyresia iridescentes*, p. 429, *quadrocellana*, *pavonana*, p. 430, *quadristrigana*, p. 432, Japan etc., *dificilana*, p. 433, *junctistrigana*, Asiatic Turkey, *geministriata*, China, p. 434, WALSINGHAM, t. c. n. spp.
- Leontochroma* n. g., p. 466, for *L. aurantiacum*, *suppuratum*, p. 467, *viridiochraceum*, Sikkim, *lebetanum*, China, p. 468, n. spp., WALSINGHAM, Ann. Nat. Hist. v.
- Lipsotelia* n. g. p. 569, near *Lobesia* for *L. lichenoides*, Tenasserim, *albifascies*, China, p. 570, n. spp., WALSINGHAM, Swinhoe, Cat. Lep. Het. ii.
- Loxopera ferruginea*, Asiatic Turkey, WALSINGHAM, Ann. Nat. Hist. vi, n. sp.
- Loxotenia ishidaii*, Japan, MATSUMURA, p. 194, Ent. Nachr. xxvi, n. sp.
- Loxopera francillonana*, larval habits, CHAPMAN, p. xi, P. ent. Soc. London 1900.
- Microcorses* n. g., p. 465, for *M. marginifasciatus* n. sp., Japan, p. 466, WALSINGHAM, Ann. Nat. Hist. v.
- Olethreutes*, *Cymolomia*, *Eccopsis*, *Exartema*, characters and components, WALSINGHAM, pp. 127-129, Ann. Nat. Hist. vi.
- O. notata*, Japan, WALSINGHAM, p. 129, Ann. Nat. Hist. vi, n. sp.
- Oxygrapha* Hb. = (*Rhacodia* Hb.), WALSINGHAM, p. 369, Ann. Nat. Hist. v.
- O. quadridentana*, China, p. 369, *carulescens*, Japan, p. 370, *paradisoana*, Amur & Japan, p. 371, *tunicatana*, p. 372, *japonica*, Japan, *undulana*, p. 374, with var. *coprana*, Turkey in Asia, *synonyma*

- p. 376, *fuscotogata*, p. 377, Japan, WALSINGHAM, Ann. Nat. Hist. v, n. spp.
- Pammene juliana*, *nimbana*, distinguished, generic position, WALSINGHAM, p. 193, Ent. Mag. xxxvi.
- P. nannodes*, Syria, p. 436, *P. ? griseana*, Japan, p. 436, WALSINGHAM, Ann. Nat. Hist. vi; *P. (Phihoroblastis) dichrorhamphana*, Chingan-Geb, pl. v, fig. 32, p. 156, KENNEL, Deutsche ent. Zeitschr. Lep. xiii : n. spp.
- Pelatea bicolor*, Japan, WALSINGHAM, p. 335, Ann. Nat. Hist. vi, n. sp.
- Penthina caucasicana* Lischk, p. 136, pl. v, fig. 12, *hepialana*, p. 137, fig. 13, *helvinana*, fig. 14, p. 138, Mongolia, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *P. apicinudana*, Madagascar, MABILLE, p. 750, Ann. Soc. ent. France lxviii : n. spp.
- Peronea cristana*, varr., DALE, p. 179, Entomologist xxxiii.
- Phæcodophora* n. g. near *Phæcasiphora*, for *P. fimbriata*, p. 130, *P. ? acutana*, p. 131, Japan, *divisa*, Assam, p. 132, *ochracea*, Corea, p. 133, n. spp., WALSINGHAM, Ann. Nat. Hist. vi.
- Phæcasiphora fernaldana*, p. 135, *pryeri*, p. 136, Japan, WALSINGHAM, t. c. n. spp.
- Phalonia sabulicola* n. n. for *Conchylis erigerana* Wals. nec Riley, WALSINGHAM, p. 194, Ent. Mag. xxxvi.
- P. astiva*, Asiatic Turkey, WALSINGHAM, p. 445, Ann. Nat. Hist. vi, n. sp.
- Pharmacia magister*, Asiatic Turkey, WALSINGHAM, p. 443, t. c.; *P. apicana*, Japan, WALSINGHAM, p. 489, op. cit. v : n. spp.
- Phoxopteris kincaidiana*, Alaska, FERNALD, p. 500, P. Washington Ac. ii, n. sp.
- Phtheochroa? Cochylis? thiana*, Thian Schan, STAUDINGER, p. 348, Deutsche ent. Zeitschr. Lep. xii; *P. albiscutellum*, Japan, WALSINGHAM, p. 487, Ann. Nat. Hist. v : n. spp.
- Polychronis (Eudemis) herculeana*, Kuldscha, p. 139, pl. v, fig. 15, *P. pullana*, Taganrog, figg. 16, 17, p. 140, KENNEL, Deutsche ent. Zeitschr. Lep. xiii, n. spp.
- Propedeis* n. g. near *Carposina*, p. 122, for *P. excisa*, *japonica* n. spp., Japan, p. 123, WALSINGHAM, Ann. Nat. Hist. vi.
- Pygolopha rhodophana*, larval habits, WALSINGHAM, p. 152, Ent. Mag. xxxvi.
- Retinia argyromixtana*, Madagascar, MABILLE, p. 751, Ann. Soc. ent. France lxviii, n. sp.
- Sciaphila wahlboimiana* var. n. *obscurana*, REUTER, Acta Soc. Faun. Fenn. xv, No. 5, p. 46.
- Semaria oculatana*, Irkutsk, pl. v, fig. 19, p. 143, *paetulana*, Guberli, fig. 20, p. 145, *intermedia*, fig. 21, p. 146, *elutana*, figg. 22, 23, p. 147, *tundrana*, figg. 24, 25, p. 148, Amur, *infirmana*, Askhabad, fig. 29, p. 153, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *S. phaseoli*, Japan, MATSUMURA, p. 197, Ent. Nachr. xxvi : n. spp.
- Sericoris morivora*, Japan, MATSUMURA, p. 195, t. c. n. sp.
- Steganopticha explicatana*, Guberli, pl. v, fig. 18, p. 141, KENNEL, Deutsche ent. Zeitschr. Lep. xiii; *S. arciferana*, *albosectana*, *selenana*, p. 752, *leucospilana*, *pusillana*, Madagascar, MABILLE, Ann. Soc. ent. France lxviii : n. spp.
- Syngamoneura* n. g. for *S. rubronotana* n. sp., Madagascar?, MABILLE, p. 750, t. c.
- Teras comparatum* var. n. *cinereana*, REUTER, p. 33, Acta Soc. Faun. Fenn. xv, No. 5.
- Thiodia infessana*, Asiatic Turkey, p. 404, *intacta*, Japan, p. 405, *sinensis*, China, *niveicaput*, Japan, p. 406, WALSINGHAM, Ann. Nat. Hist. vi, n. spp.
- Tortrix forsterana* var. n. *immaculatana*, STRAND, p. 43, Arch. Naturv.

- Christian. xxii, No. 5; *T. quinquemaculana* Brem., characters, figure, KENNEL, p. 127, pl. v, fig. 3, Deutsche ent. Zeitschr. Lep. xiii; *T. musculinana*, note on, DURRANT, p. 60, Ent. Mag. xxxvi; *T. formosana*, larva, JOANNIS, p. 299, Bull. Soc. ent. France 1900; *T. paleana*, early stages, REUTER, pp. 35-39, Acta Soc. Faun. Fenn. xix, No. 1.
- T. saclava*, stipulaceaana, rubrostrigana, p. 749, ocellata, p. 750, Madagascar, MABILLE, Ann. Soc. ent. France lxviii; *T. trigonana*, Japan, WALSINGHAM, p. 443, Ann. Nat. Hist. vi; *T. denticinctana*, tigricolor, Japan, p. 452, conchyloides, China, p. 453, leechi, p. 454, christophana, joannisi, p. 455, China, exuberans, Corea, striatulana, China, etc., p. 456, nigricaudana, Corea, p. 459, tristrami, Palestine, p. 460, barbarana, Turkey in Asia, p. 461, WALSINGHAM, op. cit. v : n. spp.
- T. templana*, p. 225, rufostriatana, p. 226, Bismarck Arch., PAGENSTECHER, Zoologica xxix; *T. argyrapis*, Brisbane, LOWER, p. 410, P. Linn. Soc. N. S. Wales xxv : n. spp.

TINEIDÆ.

[Cf. BUCKLER (191), BUSCK (205, 206), CHRÉTIEN (250-256), DIETZ (318), DYAR (363-365), FERNALD (416), HOFMANN (597), HOLLAND (595), JOANNIS (663), LOWER (828, 829), LUCAS (832), LÜDERS (836), MURTFELDT (932), PAGENSTECHER (975), PETERSEN (993), SORHAGEN (1255), STITZ (1285), STAUDINGER (1269), TURNER (1338), WALSINGHAM (1366-1371), WALSINGHAM & DURRANT (1298), WOOD (1418), ZEHNTNER (1428).]

The male genital structures of *Tinea*, *Tineola*, *Butalis*, STITZ (1285).

Psychidae, see *Bombyces*.

Agriophara nodigera, Queensland, TURNER, p. 11, Tr. R. Soc. S. Austral. xxiv; *A. curta*, Queensland, LUCAS, p. 161, P. Soc. Queensland xv : n. spp.

Anacampsis lagunculariella, p. 230, *argyrothamniella*, p. 231, Florida, BUSCK, P. U. S. Mus. xxiii, n. spp.

Anaphorinae, revision of North American, DYAR, pp. 305-311, Canad. Ent. xxxii.

Androgyne n. g., p. 565, near *Nosymna*, for *A. punctata* n. sp., Sikkim, p. 566, WALSINGHAM, Swinhoe, Cat. Lep. Het. ii.

Antispila eugenella, Florida, BUSCK, p. 236, P. U. S. Mus. xxiii, n. sp.

Apatema n. g. near *Symmoca*, p. 219, for *A. mediopallidum* n. sp., Corsica, p. 220, WALSINGHAM, Ent. Mag. xxxvi.

Aproceraema crotolariella, Florida, BUSCK, p. 226, P. U. S. Mus. xxiii, n. sp.

Ardiosteres scoteina, Queensland, TURNER, p. 18, Tr. R. Soc. S. Austral. xxiv, n. sp.

Argyrotoxa 5-fasciana, Japan, MATSUMURA, p. 195, Ent. Nachr. xxvi, n. sp.

Aristotelia morphochroma, Cannes and Rome, WALSINGHAM, p. 80, Ent. Mag. xxxvi; *A. ioxa*, Florida, BUSCK, p. 225, P. U. S. Mus. xxiii, n. sp.

Atasthalitis euchroa, Queensland, LOWER, p. 47, P. Linn. Soc. N. S. Wales xxv, n. sp.

Atteva fabriciella Swed. = (*niviguttella* Walk. = *fabricella*), WALSINGHAM, p. 559, Swinhoe, Cat. Lep. Het. ii.

A. conspicua, Buru, WALSINGHAM, p. 559, *subasurata*, Assam, DURRANT, p. 560, Swinhoe, t. c. n. spp.

Atopocera barnesi, Texas, DYAR, p. 326, Canad. Ent. xxxii, n. sp.

Bedellia minor, Florida, BUSCK, p. 243, P. U. S. Mus. xxiii, n. sp.

Batrachedra atomoella, Sokotra, WALSINGHAM M^{rs}
iii; *B. cyprianeura*, N. S. Wales
Wales xxv : n. spp.

- Birthana* and *B. consocia* Walk., redescribed, WALSINGHAM, p. 551, Swinhoe, Cat. Lep. Het. ii.
- Blabophanes rusticella* var. n. *semispilotella*, STRAND, p. 51, Arch. naturv. Christian, xxii, No. 5.
- B. stichomela*, S. Australia, LOWER, p. 422, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Blastobasis segnella*, the habitat is Europe, not N. America, WALSINGHAM, p. 179, Ent. Mag. xxxvi.
- B. guilandina*, Florida, BUSCK, p. 234, P. U. S. Mus. xxiii, n. sp.
- Brenthia elachista*, Christmas Is., WALSINGHAM, p. 76, Monogr. Christmas Island, n. sp.
- Bucculatrix ivella*, Florida, BUSCK, p. 243, P. U. S. Mus. xxiii, n. sp.
- Bursadella sulfurella*, Bismarck Arch., PAGENSTECHER, p. 231, Žoologica xxix, n. sp.
- Butalis basilaris*, see *Schreckensteinia festallia*.
- B. penicillata*, France, CHRÉTIEN, p. 163, Bull. Soc. ent. France 1900, n. sp.
- Buxeta* Walk., recharacterised, WALSINGHAM, p. 561, Swinhoe, Cat. Lep. Het. ii.
- Callitharima* n. g. *Plutellidae* for *C. basilica* n. sp., Queensland, TURNER, p. 15, Tr. R. Soc. S. Austral. xxiv.
- Catoryctis emarginata*, Queensland, LUCAS, p. 154, P. Soc. Queensland xv, n. sp.
- Caunaca insulella*, Corsica, WALSINGHAM, p. 153, Ent. Mag. xxxvi, n. sp.
- Cobysa leucotelus* Walk. = *Pitane dilecta* Walk. = *Severis conflictella* Walk. = *Oecinea scotti* Scott), WALSINGHAM, p. 583, Swinhoe, Cat. Lep. Het. ii.
- Ceratophora ochreoviridella*, Bismarck Arch., PAGENSTECHER, p. 236, Žoologica xxix, n. sp.
- Cerostoma*, cf. *Phrealcia*.
- C. kaebelella*, California, DYAR, p. 40, Canad. Ent. xxxii, n. sp.
- Chilocampyla* n. g. near *Gracilaria*, p. 248, for *C. dyariella* n. sp., Florida, p. 249, BUSCK, P. U. S. Mus. xxiii.
- Choreutis*, N. American allies, synonymy, characters, FERNALD, pp. 236–245, Canad. Ent. xxxii.
- C. leucobasis*, N. America, FERNALD, p. 242, t. c.; *C. sororculella*, *occidentella*, *extrincicella*, p. 86, *coloradella* (Fern.), *leucobasis* (Fern.), p. 85, N. America DYAR, t. c. : n. spp.
- Chrysoryctis ochroantha*, Brisbane, TURNER, p. 19, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Cimitra* Walk., distinguished from *Hapsifera*, DURRANT, p. 580, Swinhoe, Cat. Lep. Het. ii.
- Coleophora spissicornis* Haw. = (*fabricella* de Vill.), WALSINGHAM & DURRANT, p. 4, Ent. Mag. xxxvi; *C. albidella* and *anatipennella*, distinguished, SORHAGEN, p. 113, Illustr. Zeitschr. Ent. v; *C. spumosella*, *congeriella*, *acrisella*, larvae and cases, CHRÉTIEN, p. 68, Natural. xxii; *C. stefani*, habits, WALSINGHAM, p. 59, Ent. Mag. xxxvi.
- C. mongetella*, E. Pyrenees, CHRÉTIEN, p. 69, Naturaliste xxii, n. sp.
- Coptodisca condalizie*, Florida, BUSCK, p. 242, P. U. S. Mus. xxiii, n. sp.
- Coriscium randiella*, Florida, BUSCK, p. 247, t. c. n. sp.
- Coryptilum* Z. = (*Sipharara* Walk. = *Sagora* Walk.), *C. euchromiella* Walk. = (*repandens* Walk. M. S.), *C. rutillellum* = (*triphaenoides* Snell.), WALSINGHAM, p. 580, Swinhoe, Cat. Lep. Het. ii.
- Cosmopteryx scribaliella*, distribution, ERTL, Illustr. Zeitschr. Ent. v, p. 163.
- C. pallifasciella* (Snell.), Java, ZEHNTNER (1428); *C. ipomaeæ*, *nigrapunctella*, Florida, BUSCK, p. 235, P. U. S. Mus. xxiii : n. spp.
- Crocanthes zonodesma*, Queensland, LOWER, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Cryptophaga balteata* Walk. (as *Zitna*) = (*lurida* Meyr. = *acroleuca* Turn.), TURNER, p. 7, Tr. R. Soc. S. Austral. xxiv.

- C. opalina*, Brisbane, TURNER, l. c.; *C. eugeniae*, p. 153, *molaris*, p. 154, Queensland, LUCA, P. Soc. Queensland xv : n. spp.
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Depressaria persicella, N. America [Murtfeldt, 1899] referred to *Gelechia* and redescribed, with larva, MURTFELDT, Canad. Ent. xxxii, pp. 164, 165; *D. amyrisella*, Florida, BUSCK, p. 233, P. U. S. Mus. xxiii : n. spp.
Enæmia rutilella, Bismarck Arch., PAGENSTECHER, p. 233, Zoologica xxix ; *E. mixoleucha*, Queensland, TURNER, p. 14, Tr. R. Soc. S. Austral. xxiv, n. sp.
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Eulepiste cockerelli, New Mexico, DYAR, p. 307, Canad. Ent. xxxii, n. sp.
Exapate duratella, natural history, CHRÉTIEN, pp. 118-120, Naturaliste xxii.
Felderia dorsimacula, Arizona, DYAR, p. 328, Canad. Ent. xxxii, n. sp.
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G. quadragintapunctata, Kansas, DYAR, p. 84, Canad. Ent. xxxii, n. sp.
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- Gonæpa* and *G. josianella* Walk., characters of, WALSINGHAM, p. 543, Swinhoe, Cat. Lep. Het. ii.
- Goniodesma*, larval habits, WALSINGHAM, p. 158, Ent. Mag. xxxvi.
- Gourbia* n. g., *staphylinella* n. sp., Tunis, CHRÉTIEN, p. 119, Naturaliste xxii.
- Gracilaria polyplaca*, sexes, TURNER, p. 20, Tr. R. Soc. S. Austral. xxiv.
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- G. burserella*, *sebastianella*, Florida, BUSCK, p. 251, P. U. S. Mus. xxiii, n. spp.
- Guenea* Bruand, 1847, omitted from Scudder's Nomenclator, WALSINGHAM, p. 152, Ent. Mag. xxxvi.
- Hemerophila dyari*, with larva, Florida, BUSCK, p. 242, nervuration, pl. ix, fig. 9, BUSCK, J. N. York Ent. Soc. viii, n. sp.
- Hieropola* Meyr., cf. *Tisobarica*.
- Homadaula coscinopa*, N. S. Wales, LOWER, p. 51, P. Linn. Soc. N. S. Wales xxv, n. sp.
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- H. habroptera*, Queensland, LOWER, p. 411, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Hyperperissa* n. g. *Gelechiidae*, for *Sidyma aurantiaca* Semper, WALSINGHAM, p. 546, Swinhoe, Cat. Lep. Het. ii.
- Hypsophorus granti*, p. 2, *thoracella*, p. 3, Sokotra, WALSINGHAM, Bull. Liverp. Mus. iii, n. spp.
- Ischnoscia* Meyr. = (*Guenea* Mill. nec Bruand), WALSINGHAM, p. 152, Ent. Mag. xxxvi.
- I. carbonifera*, Corsica, id. L. c. n. sp.
- Jobula* Walk., cf. *Tortricomorpha*.
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- Laverna argenticimaculella*, N. America, with larva, MURTFELDT, Canad. Ent. xxxii, n. sp.
- Leioprora* n. g. near *Lyonetia*, for *L. ascepta* n. sp., Brisbane, TURNER, p. 22, Tr. R. Soc. S. Austral. xxiv.
- Leucoptera smilaciella*, with larva, N. America, BUSCK, p. 244, nervuration, pl. ix, fig. 6, J. N. York Ent. Soc. viii; *L. erythrinella*, *guettardella*, Florida, BUSCK, p. 239, P. U. S. Mus. xxiii : n. spp.
- Lichenaula inscripta*, male, TURNER, p. 9, Tr. R. Soc. S. Austral. xxiv.
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- Linosticha pudica*, N. S. Wales, LOWER, p. 41, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Lita mucronatella*, Alps, CHRÉTIEN, p. 138, Bull. Soc. ent. France 1900; *L. capsophilella*, Alps, CHRÉTIEN, p. 223, t. c. : n. spp.
- Lithocletis*; structure, larvæ and habits of species allied to *L. concomitella*, Wood (1418); *L. mahalebella*, distinguished from *cerasicolella*, and *betulae* from *corylifoliella*, SORHAGEN, pp. 114, 115, Illustr. Zeitschr. Ent. v; *L. schreberella*, var. n. *obumbrata*, p. 212, pl. fig. 4, *quinqueguttella* Staint. and others, pp. 232, 233, *cerisolella* etc., pp. 248–251, characters and habits, SORHAGEN, t. c.; *L. pyrivorella*, habits, BANKES, p. 125, Ent. Mag. xxxvi.
- Lithocletis lativittella*, p. 211, pl. fig. 1, *crocinella*, fig. 2, *graeseriella*, fig. 5, p. 212, *domesticella*, fig. 14, p. 213, *repentella*, p. 232, fig. 7, *dahniella*,

- p. 250, fig. 18, Germany, SORHAGEN, Illustr. Zeitschr. Ent. v; *L. verbesinella*, Florida, BUSCK, p. 246, P. U. S. Mus. xxiii : n. spp.
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Opostega nubifera, Queensland, TURNER, p. 23, Tr. R. Soc. S. Austral. xxiv, n. sp.
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Ortholophus piger, Texas, DYAR, p. 328, Canad. Ent. xxxii, n. sp.
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- Peritornenta* n. g. (Meyr.) *Oecophoridae*, p. 13, for *P. stigmatias* n. sp., Brisbane, p. 14, and *circulatella* Walk., TURNER, t. c.
- Philobota micrastis, paragypsa*, p. 412, *P. ? tetraspura*, p. 413, Australia, LOWER, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Phrealcia* n. subg. of *Cerostoma*, for *P. (sic) brevipalpella*, n. sp., Alps of France, CHRÉTIEN, p. 90, Bull. Soc. ent. France 1900; *P. brevipalpella*, habits, VIARD, p. 270, t. c.
- Phylloconistis*; LÜDERS (836); *P. insignis* Frey = (*erechtitisella* Chamb.), BUSCK, p. 252, P. U. S. Mus. xxiii.
- P. sorhageniella*, LÜDERS (836); *P. intermediella*, Florida, BUSCK, p. 253, P. U. S. Mus. xxiii : n. spp.
- Phylomictis arctans*, p. 159, *decretoria, obliquata*, p. 160, Queensland, LUCAS, P. Soc. Queensland xv, n. spp.
- Pilostibes trachyptera*, Queensland, TURNER, p. 6, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Podiasa* n. g. *Tineidae* for *P. chiooccella*, n. sp., Florida, BUSCK, p. 240, P. U. S. Mus. xxiii.
- Polyhymno acaciella*, with larva, N. America, nervuration, pl. ix, fig. 1, BUSCK, p. 235, J. N. York Ent. Soc. viii, n. sp.
- Procometis hylonomia* Meyr. = (*acompta* Turn. = *heterogama* Low.), TURNER, p. 11, Tr. R. Soc. S. Austral. xxiv.
- Pseudocaprima* n. g. for part of *Caprima*, with *P. callopisma*, New Guinea, p. 563, *albofimbriata*, Waigin, p. 564, n. spp., WALSINGHAM, Swinhoe, Cat. Lep. Het. ii.
- Pseudochelaria walsinghami*, N. America, DIETZ, p. 352, pl. i, fig. 3, Ent. News Philad. xi, n. sp.
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- Pyroderces thermophila*, New South Wales, LOWER, p. 419, P. Linn. Soc. N. S. Wales xxv, n. sp.
- Sagora* Walk. cf. *Coryptilum*.
- Saphtha elegans*, India, WALSINGHAM, p. 567, Swinhoe, Cat. Lep. Het. ii, n. sp.
- Scardia clathrella* F. & R. = (*dicyotis* Meyr.), WALSINGHAM, p. 579, t. c.
- Scelorthus* n. g. *Elachistidae*, p. 239, for *S. pisoniella*, n. sp., Florida, p. 240, nervuration, pl. ix, fig. 4, larva, p. 240, BUSCK, J. N. York Ent. Soc. viii.
- Schreckensteinia festaliella*, nec *Butalis basilaris*, was the species habits of which were recorded in Psyche vii, 1895; DYAR, p. 11, Psyche ix.
- Scythris denticolor, neurogramma*, p. 4, *S. ? pectinicornis*, p. 5, Sokotra, WALSINGHAM, Bull. Liverp. Mus. iii, n. spp.
- Simaethis ornaticornis*, Christmas Is., WALSINGHAM, p. 77, Monogr. Christmas Island, n. sp.
- Sipparara* Walk. cf. *Coryptilum*.
- Stathmopoda mannophora*, Queensland, TURNER, p. 23, Tr. R. Soc. S. Austral. xxiv, n. sp.
- Syntomactis oxyptera, xenonympha*, p. 420, *chionomera*, p. 421, N. S. Wales, LOWER, P. Linn. Soc. N. S. Wales xxv, n. spp.
- Telecrates tessellata*, Queensland, LUCAS, p. 159, P. Soc. Queensland xv, n. sp.
- Thaumatographa excellens*, Bismarck Arch., PAGENSTECHER, p. 230, Zoologica xxix, n. sp.
- Thenuscryra* Walk. = (*Cyptasia* Walk.), WALSINGHAM, p. 560, Swinhoe, Cat. Lep. Het. ii.
- Tinea vinculella* and allies, synonymy, WALSINGHAM, p. 177, Ent. Mag. xxxvi; *T. fuscipunctella*, destroying pupae, SKINNER & SATTERTHWAITE, p. 502, Ent. News Philad. xi.
- T. richardsoni*, England, p. 176, *mensella*, Corsica, p. 177, *pachyceras*,

- Switzerland, p. 178, WALSINGHAM, Ent. Mag. xxxvi; *T. oregonella*, N. America, BUSCK, p. 246, J. N. York Ent. Soc. viii : n. spp.
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T. chlorolepis, Christmas Is., WALSINGHAM, p. 78, Monogr. Christmas Island; *T. albifasciella*, Bismarck Arch., PAGENSTECHER, p. 234, Zoologica xxix; *T. hemixanthella*, Buru, HOLLAND, p. 590, Nov. Zool. vii; *T. congralis*, New Guinea, p. 546, *diluticiliata*, Assam, *oblique-fasciata*, Singapore, p. 547, WALSINGHAM, Swinhoe, Cat. Lep. Het. ii : n. spp.
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Wingia n. n. for *Palparia* Wing, WALSINGHAM, p. 552, Swinhoe, Cat. Lep. Het. ii.
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Xysmatodona polymeres, *tenceres*, Brisbane, TURNER, p. 18, Tr. R. Soc. S. Austral. xxiv, n. spp.
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[Cf. BUCKLER (191), CHAPMAN (240), PAGENSTECHER (975), PETERSEN (993), SCHÜTZE (1168), WALSINGHAM (1366, 1367), WALSINGHAM & DURRANT (1298).]

- Aciptilia niveodactyla*, Bismarck Arch., PAGENSTECHER, p. 240, Zoologica xxix, n. sp.
Agdistis minima, Sokotra, WALSINGHAM, p. 1, Bull. Liverp. Mus. iii, n. sp.
Alucita albitalressella, India, WALSINGHAM, p. 542, Swinhoe, Cat. Lep. Het. ii, n. sp.
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- Cosmoclostis quadriquadra*, Christmas Is., WALSINGHAM, p. 75, Monogr. Christmas Island, n. sp.
- Deuterescopus rubrodactylus*, Bismarck Arch., PAGENSTECHER, p. 241, Zoologica xxix, n. sp.
- Hofmannia* n. g. *Orneodidae*, for *H. septemdactyla* n. sp., Bismarck Arch., PAGENSTECHER, p. 241, t. c.
- Orneodes hofmanni*, Bismarck Arch., PAGENSTECHER, p. 242, t. c.
- Leioptilus* ? *griseodactylus*, *L. sericeodactylus*, Bismarck Arch., PAGENSTECHER, p. 240, t. c. n. spp.
- Pterophorus galactodactylus*, last larval moult, CHAPMAN (240).
- Synaphia* n. g. *Pterophoridae*, for *S. pyrrha* n. sp., Bismarck Arch., PAGENSTECHER, p. 238, Zoologica xxix.
- Trichoptilus ralumensis*, Bismarck Arch., PAGENSTECHER, p. 239, t. c. n. sp.

(D.) *DIPTERA.*

[Cf. AUSTEN (48, 983), BECKER (82, 83), BENGTSSON (94), BERLESE (103-105), BEZZI (118, 119), BOLLE (135), BRUES (185), CANNON (226), CHRISTOPHERS & STEPHENS (257), COCKERELL (268-270), COLLEDGE (287), COQUILLETT (288-294, 616), CZERNY (306-308), DANIELS (309), DANIELS, STEPHENS & CHRISTOPHERS (310), DOANE (333), ESCHERICH (382), FRENCH (447), FROGGATT (464, 468), GILES (508), GRASSI (516-519), HENDEL (580, 581), HENNEGUY (582), HINE (594), HOUGH (609), HOWARD (611, 612, 613, 615), HUBER (618), HUNTER (630), HUTTON (631), IMHOF (637), JACOBS (638, 639), JOHNSON (665, 666), KELLOGG (683-685), KERTÉSZ (695-699), KIEFFER (477, 704-708), KIEFFER & TROTTER (709), LAVERAN (799-801), LÉCAILLON (806), LUNDBECK (838), LÜSTNER (839), DE MEIJERE (886-888), MELANDER (889), MELANDER & BRUES (890), MÉNÉGAUX (894, 895), MIAILL & HAMMOND (907), MIK (909-911), MEUNIER (900, 905), NOË (946), ORMEROD (965), OSTER SACKEN (972), PANDELLÉ (977), PANTEL (978), PIEPER (984), PERRONCITO (992), PORTSCHINSKY (1048, 1049), PRATT (1054), RICARDO (1115-1117), RÜDER (1124), SAUNDERS (1148), SHARP (1208), SNOW & MILLS (1252), SPEISER (1260-1264), STEFANI (1274), STEIN (1276-1280), STEPHENS & CHRISTOPHERS (1281), STROBL (1290-1292), SUPINO (1293-1295), THEOBALD (1314, 1316), TRUCHOT (1329), VANNEY (1348-1350), VILLENEUVE (1358), VOGLER (1359, 1360), WASMANN (1378), WEBSTER (1388), WESCHÉ (1406), WHEELER (1410, 1411), WILLISTON (511), WRIGHT (1419), WULF (511).]

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The forms in which halteres are absent, SPEISER, Arch. Naturg. lxvi, p. 41.

Physiology of metamorphosis, see Physiology, p 84, and Development, p. 88.

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Structure and life history of *Chironomus*, MIAILL & HAMMOND (907).

Catalogue of S. American *Diptera*, pt. i, Bibliography and *Nemocera*, HUNTER (630).

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APHANIPTERA (SIPHONAPTERA).

[Cf. HESSE (585), HEYMONS (587), HUBER (618), N. C. ROTHSCHILD (1134, 1135).]

The mouth-parts of *Pulex*, HEYMONS (587).

Ceratophyllus gallinae, p. 540, *columbae*, *hirundinis*, p. 542, recognised as distinct, characters, genitalia figured, ROTHSCHILD, Nov. Zool. vii.

C. styx on Sand-Martin, ROTHSCHILD, p. 543, pl. ix, t. c. n. sp.

Hystrichopsylla tulpeae, hosts, figure, N. C. ROTHSCHILD, p. 257, pl. x, Ent. Rec. xii.

Pulex avium: more than one species under this name: (cf. *Ceratophyllus*), ROTHSCHILD, Nov. Zool. vii.

P. madagascariensis, on *Centetes ecaudatus*, ROTHSCHILD, p. 37, Ent. Rec. xii, n. sp.

Sarcopsylla, *Pulex*, clinical bibliography, HÜBER (618).

S. penetrans, spread in Africa, HESSE (585).

Typhlopsylla tristis, Victoria, p. 36, *ingens*, S. Africa, p. 37, ROTHSCHILD, Ent. Rec. xii, n. spp.

(E.) *RHYNCHOTA OR HEMIPTERA.*

KIRKALDY (729) gives copious nomenclatorial notes which it is impossible for us to deal with in detail; and in (730) gives additions and makes observations on Lethierry & Severin's Catalogue: and proposes new names for a number of genera of Homoptera. The new names are recorded by us, but other synonymy must be sought in the work itself.

Notes and corrections to Reed's work (not yet seen) on Chilian *Hemiptera*, BERG (102).

The stridulation of *Hemiptera*, historical and general account, HANDLIRSCH (554).

Stridulation; the views of Swinton, Goureau, and others, HANDLIRSCH (555).

HEMIPTERA-HETEROPTERA.

[The following memoirs relate to *Hemiptera-Heteroptera*, viz.:—BERG (97, 102), BREDDIN (172-176), CAUDELL (230), CHAMPION (235, 511), COCKERELL (279), DISTANT (322-329), HANDLIRSCH (554, 555, 560), HEIDEMANN (572), HORVÁTH (606, 607), HUEBER (622), JAKOWLEFF (656), KIRBY (725), KIRKALDY (727-733), KUHLGATZ (787), MARCHAL (855), MARTIN (863, 864), MEUNIER (904), MONTANDON (917, 918, 920), MONTGOMERY (921), PAULMIER (980), PAZLAVSZKY (981), PLATEAU (1044), REUTER (1105-1109), STROBL (1290).]

Euctenodes, discussed and referred to *Diptera*, SPEISER (1260).

PENTATOMIDÆ.

Pentatominae: DISTANT treats the synonymy of this family, especially, but not exclusively, as regards Walker's species, Ann. Nat. Hist. v, pp. 386 etc. The synonymy is not recorded in our pages. DISTANT gives a summary of it, pp. 430-435, t. c.

Asopina and *Tessaratominae* of Walker reviewed, DISTANT (323).

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Synonymy and taxonomy of the *Pentatomidae* of the Hope collection at Oxford, DISTANT, pp. 807-824, P. Zool. Soc. London. Includes several pages of corrections of generic position.

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Acoloba malleata, Delagoa Bay, DISTANT, p. 82, Ent. Mag. xxxvi, n. sp.

Acrozangis n. g. near *Zangis*, p. 310, for *A. semiprasina* n. sp., Sumatra, p. 311, BREDDIN, Ent. Zeit. Stettin lxi.

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- Aegaleus bechuana*, Centr. Africa, KIRKALDY, p. 78, Entomologist xxxiii, n. sp., but cf. *Antestia variegata*.
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- Æ. simillima*, Turkestan, REUTER, t. c., p. 233, n. sp.
- Æchocoris nodiventris*, Sumatra, BREDDIN, p. 298, Ent. Zeit. Stettin lxi, n. sp.
- Æthus nitens*, Christmas Is., KIRBY, p. 127, pl. xv, fig. i, Monogr. Christmas Island, n. sp.
- Ætius* n. g. for *Atelocerus variegatus* Westw., pl. lii, fig. 8, DISTANT, p. 813, P. Zool. Soc. London 1900.
- Agæus metallicus*, Sumatra, BREDDIN, p. 303, Ent. Zeit. Stettin lxi, n. sp.
- Amynor pallidus*, Sumatra, BREDDIN, p. 328, t. c. n. sp.
- Anasida funebris*, Natal, DISTANT, p. 59, Ann. Nat. Hist. vi, n. sp.
- Anaxandra bovilla*, Assam, DISTANT, p. 229, t. c. n. sp.
- Antestia variegata* Thunb. (as *Cimex*) = *(Aegaleus bechuana* Kirk.), *Pent. lineaticollis* Stål is a var., DISTANT, p. 174, Tr. ent. Soc. London 1900.
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- Araducta* Wlk. recharacterised, DISTANT, p. 426, Ann. Nat. Hist. v.
- A. bella*, Ceylon, p. 427, *malayana*, Pulo Perang, p. 428, DISTANT, t. c. n. spp.
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- B. diversus*, W. Australia, p. 223, *negus*, Arabia and Abyssinia, p. 224, DISTANT, Ann. Nat. Hist. vi, n. spp.
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- Brachyaulax kukenthali*, Halmahera, BREDDIN, p. 140, Abh. Senckenb. Ges. xxv, n. sp.
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- Brachynema ruficorne*, Turkestan, REUTER, p. 235, Ofv. Finska Forh. xlii ; *B. venustum*, Oran, MONTANDON, p. 158, Bull. Soc. Bucarest ix : n. spp.
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- Byrsinocoris* n. g. near *Peribyssus*, p. 156, for *B. nigroscutellatus* n. sp., Biskra, p. 157, MONTANDON, Bull. Soc. Bucarest ix.
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- Carbula trabifera*, Sumatra, BREDDIN, p. 302, Ent. Zeit. Stettin lxi, n. sp.

- Caura polluta*, Angola, DISTANT, p. 168, Tr. ent. Soc. London 1900, n. sp.
- Chiastosternum* Karsch = (*Asolenidium* Br.), BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Chlorochroa rubromarginata* (Reut. as *Pentaloma*) redescribed, REUTER, p. 234, Ofv. Finska Forh. xlii.
- Coleotichus sumatranaus*, Sockaranda, BREDDIN, p. 276, Ent. Zeit. Stettin lxi, n. sp.
- Coptosoma accensitum*, *paradoxum*, characters as distinct from *pygmaeum*, MONTANDON, pp. 535, 536, Ann. Mus. Genova xl; *C. respersum* ♂, p. 418, *C. insulanum* var. *n. detectum*, p. 419, MONTANDON, Termes. Fuzetek xxiii.
- C. bullatum*, p. 416, *annulipes*, p. 417, Madagascar, *stabilitum*, New Guinea, p. 419, MONTANDON, t. c.; *C. centronotatum*, p. 531, *dissolutum*, p. 533, *impicticole*, p. 537, Sumatra, MONTANDON, Ann. Mus. Genova xl : n. spp.
- Cresphonites monsoni*, pl. lii, fig. 6, DISTANT, p. 814, P. Zool. Soc. London 1900.
- C. rufescens*, Java, BREDDIN, p. 163, Deutsche ent. Zeitschr. 1900, n. sp.
- Cuspicona recurvicornis*, p. 28, *forticornis*, p. 29, N. S. Wales, BREDDIN, Ent. Nachr. xxvi, n. spp.
- Cyclopelta parva*, China, DISTANT, p. 220, Ann. Nat. Hist. vi, n. sp.
- Cydnus sahlbergi*, Corfu, REUTER, p. 222, Ofv. Finska Forh. xlii, n. sp.
- Dalpada trimaculata* ♀, BREDDIN, p. 142, Abh. Senckenb. Ges. xxv.
- Dictyotus pallipes*, pl. lii, fig. 9, DISTANT, p. 810, P. Zool. Soc. London 1900.
- Dinidor dispar* Westw. referred to *Hyrmine*, description, BREDDIN, p. 23, Ent. Nachr. xxvi.
- Diploriphus* subg. n., cf. *Lyramorpha*.
- Dismegistus funebris*, Kilimanjaro, DISTANT, p. 169, pl. ii, fig. 8, Tr. ent. Soc. London 1900, n. sp.
- Dorpius* n. g. *Pentatomidæ*, p. 164, for *D. typicus*, pl. ii, fig. 3, Congo, *indicus*, Punjab, fig. 4, n. spp., p. 165, DISTANT, t. c.
- Ectinopias opacus*, Costa Rica, DISTANT, p. 688, t. c. n. sp.
- Elaphoeyzum* n. g. near *Plataspis*, p. 120, for *E. goetzei* n. sp., E. Africa, p. 125, KUHLGATZ, SB. Ges. naturf. Berlin 1900.
- Elasmostethus nebulosus*, *nilgirensis*, p. 231, *levisi*, p. 232, E. India, DISTANT, Ann. Nat. Hist. vi, n. sp.
- Embolesterna olivacea*, Borneo, HORVÁTH, p. 366, Termes. Fuzetek xxiii, n. sp.
- Emphylocoris* n. g. near *Puacasta*, p. 217, for *E. testaceus* n. sp., Turkestan, p. 218, REUTER, Ofv. Finska Forh. xlii.
- Eurynome laeta*, Ternate, BREDDIN, p. 142, Abh. Senckenb. Ges. xxv, n. sp.
- Eurydemus lineola* (Bär. as *Strachia*), redescribed, p. 236, *E. rugulosa* var. *n. nigrorubra*, p. 237, REUTER, Ofv. Finska Forh. xlii.
- Eurygaster integriceps*, varieties, REUTER, p. 219, t. c.
- Eusarcus egenus*, China, JAKOWLEFF, p. 522, Horst. Soc. ent. Ross. xxxiv ; *E. capreolus*, Sumatra, BREDDIN, p. 301, Ent. Zeit. Stettin lxi : n. spp.
- Eusthenes thoracicus*, Assam, DISTANT, p. 61, Ann. Nat. Hist. vi, n. sp.
- Fernelius* n. g. *Pentatomidæ*, for *F. indicus* n. sp., Burma etc., DISTANT, p. 173, Tr. ent. Soc. London 1900.
- Frismelica* n. g. near *Megarhynchus*, p. 225, for *Cimex signatus* Fab., DISTANT, Ann. Nat. Hist. vi.
- Geotonus laticollis*, Tunis, REUTER, p. 223, Ofv. Finska Forh. xlii, n. sp.
- Glypusus sparsus*, pl. liii, fig. 5, DISTANT, p. 817, P. Zool. Soc. London 1900.
- Gonopis bantu*, E. Africa, DISTANT, p. 224, Ann. Nat. Hist. vi, n. sp.
- Gordonierius* n. g. for *Oplomus lineatus* Walk., DISTANT, p. 56, t. a.

- Halyabbas* n. g. *Pentatominae*, for *H. unicolor* n. sp., Lombok, p. 164, pl. ii, fig. 2, DISTANT, Tr. ent. Soc. London 1900.
- Halyomorpha ornativentris*, Sumatra, BREDDIN, p. 296, Ent. Zeit. Stettin lxi; *H. longiceps*, Ternate, BREDDIN, p. 143, pl. ix, fig. 3, Abh. Senckenb. Ges. xxv : n. spp.
- Hoplistodera recurva*, India, DISTANT, p. 170, pl. ii, fig. 9, Tr. ent. Soc. London 1900, n. sp.
- Hyllus fasciatus*, Ceylon, DISTANT, p. 394, Ann. Nat. Hist. v, n. sp.
- Hyrmine minor*, Sumatra, BREDDIN, p. 306, Ent. Zeit. Stettin lxi, n. sp.
- Ilerda pallescens*, pl. lii, fig. 10, DISTANT, p. 812, P. Zool. Soc. London.
- I. sudana*, Africa, DISTANT, p. 82, Ent. Mag. xxxvi, n. sp.
- Ilipia natalicola*, Natal, DISTANT, p. 82, t. c. n. sp.
- Irochrotus caspius*, *caucasicus*, p. 209, *lanatus*, p. 210, *incisus* Stål (as *Arctocoris*), p. 211, redescribed, REUTER, Ofv. Finska Forh. xlvi.
- I. excisus*, Algeria, REUTER, p. 211, t. c. n. sp.
- Jalla subdilatata*, Algeria, REUTER, p. 238, t. c. n. sp.
- Kalula* n. g. for *Celia varicornis* Westw., pl. lii, fig. 4, DISTANT, p. 809, P. Zool. Soc. London 1900.
- Lathraedus* n. g. near *Cresphonotes*, p. 25, for *L. speculator* n. sp., New Guinea, p. 26, BREDDIN, Ent. Nachr. xxvi.
- Leovitius* n. g. for *Rhuphigaster macracanthus* Dall., DISTANT, p. 425, Ann. Nat. Hist. v.
- Lincus discessus*, Costa Rica, DISTANT, p. 688, Tr. ent. Soc. London 1900, n. sp.
- Lyramorpha* revised with subg. n. *Lyrodes*, p. 345, for most of the species, and *Diploxyphus*, p. 352, subg. n. for *L. maculifera* Tryon, HORVÁTH, pp. 341–353, Termes. Fuzetek xxiii; *L. picta*, *vollenhovii*, distinguished, DISTANT, p. 379, Ann. Nat. Hist. vi.
- L. (Lyrodes* subg. n.), *impar*, *persimilis*, p. 346, *breddini*, p. 347, New Guinea, HORVÁTH, Termes. Fuzetek xxiii; *L. basalis*, New Guinea, HORVÁTH, p. 633, Semon Forschungsreisen v; *L. soror*, p. 36, New Guinea, *parens*, p. 37, Queensland, BREDDIN, Ent. Nachr. xxvi : n. spp.
- Lyrodes* subg. n., cf. *Lyramorpha*.
- Malgassus* n. g. near *Sepina*, p. 367, for *M. hypoleucus* n. sp., Madagascar, p. 368, HORVÁTH, Termes. Fuzetek xxiii.
- Madagaschia punctata*, Madagascar, MONTANDON, p. 415, t. c. n. sp.
- Melampodius* n. g. for *Atelocerus cervicornis* Westw., pl. liii, fig. 10, DISTANT, p. 817, P. Zool. Soc. London 1900.
- Menacarus ciliosus* Stål, p. 225, *arenicola* (Scholtz), p. 226, *dohrnianus* (Muls. Rey), p. 227, *diraricatus* Jak., p. 228, redescribed, REUTER, Ofv. Finska Forh. xlvi.
- M. deserticola*, Astrakhan, *transparens*, Transcaspian, JAKOWLEFF, p. 518, Horae Soc. ent. Ross. xxxiv, n. spp.
- Menestheus semoni*, Australia, HORVÁTH, p. 631, Semon Forschungsreisen v, n. sp.
- Menida atkinsoni*, India, DISTANT, p. 171, pl. ii, fig. 10, Tr. ent. Soc. London 1900; *M. labecula*, Ceylon, DISTANT, p. 396, Ann. Nat. Hist. v : n. spp.
- Microdeuterus dohrni*, Sumatra, BREDDIN, p. 335, Ent. Zeit. Stettin lxi, n. sp.
- Mormidea scutellata*, pl. lii, fig. 7, DISTANT, p. 811, P. Zool. Soc. London 1900.
- Neodius ellenriederi*, p. 292, *dohrni*, p. 294, *schulttheissi*, p. 295, Sumatra, BREDDIN, Ent. Zeit. Stettin lxi, n. spp.
- Nessula* n. g. near *Zangis*, p. 313, for *N. sponsa* n. sp., Sumatra, p. 315, BREDDIN, t. c.
- Nezara viridula*, varr. and synonymy, HORVÁTH, p. 632, Semon Forschungsreisen v.

- N. sahlbergi*, Amu Daria, REUTER, p. 236, Ofv. Finska Forh. xlii; *N. ethiops*, Tanganika, DISTANT, p. 170, Tr. ent. Soc. London 1900 : n. spp.
- Ochrophara montana*, India, DISTANT, p. 165, t. c. n. sp.
- Ocirrhoë roei*, pl. lii, fig. 12, *virescens*, pl. liii, fig. 7, DISTANT, p. 815, P. Zool. Soc. London 1900.
- O. lutescens*, K. George Sound, DISTANT, p. 422, Ann. Nat. Hist. v, n. sp.
- Oncomeris vicinus*, New Britain, HORVÁTH, p. 358, Termes. Fuzetek xxiii, n. sp.
- Opatrocydnus* n. g. near *Brachypelta*, for *O. cryptocephalus* n. sp., Sumatra, BREDDIN, p. 289, Ent. Zeit. Stettin lxi.
- Orsilochus bajulans*, Costa Rica, DISTANT, p. 687, Tr. ent. Soc. London 1900, n. sp.
- Orthoschizops assimilis*, fig. 2, *rugosus*, fig. 3, DISTANT, p. 809, P. Zool. Soc. London 1900.
- Otantesia* n. g. near *Antestia*, p. 324, for *P. pulchra* Dall, and *A. modicata* Dist., BREDDIN, Ent. Zeit. Stettin lxi.
- Pachycoris*, stridulating organs, HANDLIRSCH, pp. 131–134, Ann. Hofmus. Wien xv.
- Paramenestheus* n. g. near *Menestheus*, p. 20, for *P. terricolor* n. sp., N. S. Wales, p. 21, BREDDIN, Ent. Nachr. xxvi.
- Paranotius* n. g. near *Notius*, p. 17, for *P. punctatissimus* n. sp., N. S. Wales, p. 18, BREDDIN, t. c.
- Palomena unicolor*, pl. lii, fig. 5, DISTANT, p. 811, P. Zool. Soc. London 1900.
- Purodius* n. g. *Pentatomine*, p. 166, for *P. typicus*, Philippines, mouhoti, Cambodia, pl. ii, fig. 6, p. 167, n. spp., DISTANT, Tr. ent. Soc. London 1900.
- Pentatomia punctaria* Stål, referred to *Ænopia*, and = (*Sciocoris odiosus* Butl.), DISTANT, p. 174, t. c.; *P. harrisi* Westw., pl. liii, fig. 2, *lateralis*, fig. 9, DISTANT, p. 818, P. Zool. Soc. London 1900; *P. inclusa* Dohrn, redescribed as *Peribalus inclusus*, REUTER, p. 233, Ofv. Finska Forh. xlii.
- P. grossepunctatum*, Christmas Is., KIRBY, p. 128, pl. xv, fig. 2, Monogr. Christmas Island, n. sp.
- Pisena* n. g. near *Sepina*, p. 372, for *P. longirostris* n. sp., Madagascar, p. 373, HORVÁTH, Termes. Fuzetek xxiii.
- Platynopus parvus*, p. 66, *scutellatus*, p. 67, W. Africa, DISTANT, Ann. Nat. Hist. vi; *P. borneensis*, Borneo, DISTANT, p. 696, Tr. ent. Soc. London 1900 : n. spp.
- Platysolen obscurus* Sahlb. is var. of *Neottiglossa pusilla* Gmel., REUTER, p. 233, Ofv. Finska Forh. xlii.
- Plautia splendens*, Japan, DISTANT, p. 171, Tr. ent. Soc. London 1900, n. sp.
- Plexipus affinis*, India, DISTANT, p. 387, Ann. Nat. Hist. v, n. sp.
- Plisthenes ventralis*, *dilatatus*, characters queried, DISTANT, p. 380, Ann. Nat. Hist. vi.
- P. confusus*, p. 361, *moluccanus*, Moluccas, *australis*, Australia, p. 362, *ventralis*, New Guinea, p. 364, HORVÁTH, Termes. Fuzetek xxiii, n. sp.
- Podisus neglectus*, pl. liii, fig. 4, DISTANT, p. 817, P. Zool. Soc. London 1900.
- Podops latiuscula*, *sororcula*, p. 282, *inermiceps*, p. 284, Sumatra, BREDDIN, Ent. Zeit. Stettin lxi, n. spp.
- Prionocompastes* n. g. near *Compaster*, p. 165, for *P. salebrosum* n. sp., Java p. 166, BREDDIN, Deutsche ent. Zeitschr. 1900.
- Psacusta lethierryi* Put. referred to *Periphima* and redescribed, REUTER p. 216, Ofv. Finska Forh. xlii.
- P. affinis*, Sarepta, REUTER, p. 214, t. c. n. sp.

- Pudacus bovillus*, Costa Rica, DISTANT, p. 689, Tr. ent. Soc. London 1900, n. sp.
- Pygoplatus montanus*, Borneo, DISTANT, p. 696, t. c. n. sp.
- Rhynchosoris alatus*, India, DISTANT, p. 172, pl. ii, fig. 12, t. c.; *R. margininotatus*, Sumatra, BREDDIN, p. 325, Ent. Zeit. Stettin lxi : n. spp.
- Rhynchotmetus* n. g. near *Sepina*, p. 368, for *R. typicus* n. sp., Madagascar, p. 369, HORVÁTH, Termes. Fuzetek xxiii.
- Sabaeus kukenthali*, Celebes, BREDDIN, p. 145, pl. ix, fig. 4, Abh. Senckenb. Ges. xxv, n. sp.
- Sacecurus* n. g. near *Aspidurus*, p. 320, for *S. bicolor* n. sp., Sumatra, p. 321, BREDDIN, Ent. Zeit. Stettin lxi.
- Sustragala murreeana*, *edessoides*, p. 228, *hampsoni*, p. 229, E. India, DISTANT, Ann. Nat. Hist. vi, n. spp.
- Scaptocoris castaneus* Perty, note on, DISTANT, p. 688, Tr. ent. Soc. London 1900.
- S. talpa*, Guatemala, CHAMPION, p. 256, Ent. Mag. xxxvi, n. sp.
- Scopariipes minor*, Sumatra, BREDDIN, p. 287, Ent. Zeit. Stettin lxi, n. sp.
- Sehirius horvathi*, Tunis, REUTER, p. 221, Ofv. Finska Forh. xlii, n. sp.
- Sepina flavigera*, p. 370, *gularis*, p. 371, Madagascar, HORVÁTH, Termes. Fuzetek xxiii, n. spp.
- Severiniella*, Heterocrates and allies, table, KUHLGATZ, pp. 131–137, SB. Ges. naturf. Berlin 1900.
- Solenostethium lynceum* (Fabr. as *Cimex*) *ledereri* (Fieb. as *Coeloglossa*), redescribed, REUTTER, pp. 212, 213, Ofv. Finska Forh. xlii.
- Sphaerocoris unicolor* Dall. = (*Chionosternum mutabile* Karsch), BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Spudaeus parvulus*, pl. lii, fig. 1, DISTANT, p. 809, P. Zool. Soc. London 1900.
- Stenorygum erythraspis* var., BREDDIN, p. 22, Ent. Nachr. xxvi.
- S. minutulum*, Australia, DISTANT, p. 169, pl. ii, fig. 7, Tr. ent. Soc. London 1900, n. sp.
- Stibaropus subglaber*, Sumatra, BREDDIN, p. 286, Ent. Zeit. Stettin lxi, n. sp.
- Stictocarenus suffusus*, King Is., DISTANT, p. 230, Ann. Nat. Hist. vi, n. sp.
- Stronachlachar* n. n. for *Aleria* Stål nec Marsh., KIRKALDY, p. 242, Entomologist xxxiii.
- Tamolia* n. g. near *Plithenes*, for *Lyramorphu ramifera* Walk., HORVÁTH, p. 365, Termes. Fuzetek xxiii.
- T. horvathi* n. n. for *T. ramifera* Horv. nec Walk., DISTANT, Ann. Nat. Hist. vi, p. 379, n. sp.
- Tarisa setulosa*, Biskra, MONTANDON, p. 156, Bull. Soc. Bucarest ix, n. sp.
- Tesseratomina*; genera tabulated, HORVÁTH, pp. 339, 340, Termes. Fuzetek xxiii.
- Tholagmus nigricornis*, Turkestan, REUTER, p. 220, Ofv. Finska Forh. xlii, n. sp.
- Tolumnia immaculata*, India and Ceylon, DISTANT, p. 168, Tr. ent. Soc. London 1900, n. sp.
- Trinacavellius* n. g. *Discocephalinae* for *Sciocoris galapagoensis* Butl., figured, pl. ii, fig. 1, DISTANT, t. c. p. 163.
- Tropicorypha signata*, S. Africa, DISTANT, p. 168, t. c. n. sp.
- Urochela distincta*, China, DISTANT, p. 226, Ann. Nat. Hist. vi, n. sp.
- Utana* n. g. for *Caspicona suprema* Walk., DISTANT, p. 423, Ann. Nat. Hist. v.
- Vitellus orientalis*, India, DISTANT, p. 172, pl. ii, fig. 11, Tr. ent. Soc. London 1900; *V. antemna*, Queensland, BREDDIN, p. 33, Ent. Nachr. xxvi : n. spp.
- Zangis ludekingi* variation, BREDDIN, p. 161, Deutsche ent. Zeitschr. 1900.

COREIDÆ.

In *Rhynchotal notes* vii (325), DISTANT revises Walker's work in this family.

- Acanthocolpura brunnea*, N. S. Wales, BREDDIN, p. 40, Ent. Nachr. xxvi, n. sp.
Agraphopus suturalis, Turcomania, *virescens*, Turkestan, REUTER, p. 278, Ofv. Finska Forh. xlvi, n. spp.
Anasa perfusa, Costa Rica, DISTANT, p. 691, Tr. ent. Soc. London 1900, n. sp.
Anoplocnemis signata, p. 373, *whytei*, p. 374, E. Africa, DISTANT, Ann. Nat. Hist. vi, n. spp.
Brachylybas marmoratus, Halmahera, BREDDIN, p. 150, pl. ix, fig. 8, Abh. Senckenb. Ges. xxv, n. sp.
Chorosoma schillingi, *macilentum*, redescribed, REUTER, p. 280, Ofv. Finska Forh. xlvi.
Chorosoma longicolle, Turcomania, REUTER, p. 279, t. c. n. sp.
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Corizus hyoscyami var. n. *limbatus*, REUTER, p. 275, Ofv. Finska Forh. xlvi.
Dalader horsfieldii, Java, DISTANT, p. 376, Ann. Nat. Hist. vi; *D. shelfordi*, Borneo, DISTANT, p. 697, Tr. ent. Soc. London 1900 : n. spp.
Elasmodopoda affinis, E. Africa, DISTANT, p. 368, Ann. Nat. Hist. vi, n. sp.
Evagrius n. g. near *Holopterna*, for *E. gladius* n. sp., E. Africa, DISTANT, p. 369, t. c.
Holopterna ellioti, E. Africa, DISTANT, p. 368, t. c. n. sp.
Homalocolpura n. g., p. 155, for *H. bibax* n. sp., Celebes, p. 156, pl. ix, fig. 10; *H. edax* n. sp., Java, added, p. 201, BREDDIN, Abh. Senckenb. Ges. xxv.
Homocerus ornativentris, Borneo, BREDDIN, p. 149, pl. ix, fig. 5, t. c. n. sp.
Liorhyssus hyalinus var. n. *rubicatus*, REUTER, p. 276, Ofv. Finska Forh. xlvi.
Lybusites n. n. for *Lybas* Dall. nec Chev., KIRKALDY, p. 240, Entomologist xxxiii.
Lygeopharus ocellatus, Halmahera, BREDDIN, p. 154, pl. ix, fig. 9, Abh. Senckenb. Ges. xxv, n. spp.
Muccevethus persicus, characters, *M. lineola* var. n. *ruficornis*, REUTER, p. 277, Ofv. Finska Forh. xlvi.
Melucha biolleyi, Costa Rica, DISTANT, p. 374, Ann. Nat. Hist. vi, n. sp.
Menardus n. g. for *Meropachys notatus* Walk., DISTANT, p. 366, t. c.
Microtelocerus n. g., p. 268, near *Ceraleptus*, for *M. testaceus* n. sp., Turkestan, p. 269, REUTER, Ofv. Finska Forh. xlvi.
Mictis limbaticornis, *farinulenta*, males, DISTANT, p. 371, Ann. Nat. Hist. vi; *M. valgus* var. *rufipes*, CANNAVIELLO, p. 306, Bull. Soc. ent. xxvii.

- M. oceanensis*, New Hebrides, DISTANT, p. 372, Ann. Nat. Hist. vi, n. sp.
Mozena alata, Costa Rica, DISTANT, p. 375, t. c. n. sp.
Notobitus papuensis, New Guinea, HORVÁTH, p. 635, Semon Forschungsreisen v, n. sp.
Ochrochira lunata, China, DISTANT, p. 370, Ann. Nat. Hist. vi, n. sp.
Pachycephalini; genera tabulated, BREDDIN, pp. 194, 195, Rev. Ent. franc. xix.
Pachycolpura n. g. for *P. manca* n. sp., N. S. Wales, BREDDIN, p. 39, Ent. Nachr. xxvi.
Paryphes perspicus, Costa Rica, DISTANT, p. 692, Tr. ent. Soc. London 1900, n. sp.
Pendulinus homaeoceroides, Perak, BREDDIN, p. 169, Deutsche ent. Zeitschr. 1900; *P. cardinalis*, Celebes, BREDDIN, p. 157, Abh. Senckenb. Ges. xxv : n. spp.
Prionolomia gigas ♀, BREDDIN, p. 169, Deutsche ent. Zeitschr. 1900.
P. mandarina, China, DISTANT, p. 367, Ann. Nat. Hist. vi, n. sp.
Pternistria macromera male dimorphism, BREDDIN, p. 167, Deutsche ent. Zeitschr. 1900.
Riptortus serripes Fabr., from Thursday Island, description, HORVÁTH, p. 637, Semon Forschungsreisen v; *R. eugeniae*, characters, BREDDIN, p. 158, Abh. Senckenb. Ges. xxv.
Sciophyrus sulcicrus, p. 198, horvathi, p. 199, New Guinea, BREDDIN, Rev. Ent. franc. xix; *S. diminutus*, Thursday Island, HORVÁTH, p. 635, Semon Forschungsreisen v : n. spp.
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Strobilotoma typhaecornis var. *n. divergens*, REUTER, p. 270, t. c.
Tachycolpura n. g. for *Lybas penicillatus* Walk., BREDDIN, p. 215, Rev. Ent. franc. xix.
Tongorma n. n. for *Craspedum*, Am. nec Ramb., KIRKALDY, p. 242, Entomologist xxxiii.
Typhlocolpura n. g. for *S. decoratula* n. sp., Celebes, BREDDIN, p. 195, Rev. Ent. franc. xix.
Xanthocolpura n. g. for *X. venosa* n. sp., Borneo, BREDDIN, p. 196, t. c.

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- Astacops major*, Halmahera, BREDDIN, p. 159, Abh. Senckenb. Ges. xxv; *A. (Scopiastes) laticeps*, N. S. Wales, BREDDIN, p. 170, Deutsche ent. Zeitschr. 1900 : n. spp.
Geocoris cardinalis Put. described, REUTER, p. 244, Ofv. Finska Forh. xlii.
Ichnodemus venosus, New Guinea, BREDDIN, p. 41, Ent. Nachr. xxvi, n. sp.
Leptodemus n. g. for *Macropterna minutula* Jak., varieties, REUTER, pp. 244, 245, Ofv. Finska Forh. xlii.
Lygaeus subrufescens, pl. xv, fig. 3, p. 128, KIRBY, Monogr. Christmas Island; *L. (Melanocoryphus) sefrensis*, Algeria, REUTER, p. 243, Ofv. Finska Forh. xlii : n. spp.
Microcænecoris n. g. near *Cænecoris*, for *M. nanus* n. sp., Sumbawa, BREDDIN, p. 171, Deutsche ent. Zeitschr. 1900.
Pachygrontha vidua, New Guinea, HORVÁTH, p. 638, Semon Forschungsreisen v, n. sp.
Phoronastes n. n. for *Phoronous* Stål nec Raf., KIRKALDY, p. 242, Entomologist xxxiii.

PYRRHOCORIDÆ.

- Antilocerus coquebertii*, predaceous habits, KIRKALDY, p. 295, Entomologist xxxiii; *A. histrionicus*, characters, BREDDIN, p. 161, Abh. Senckenb. Ges. xxv.

- A. maximus*, Sumatra, BREDDIN, p. 172, Deutsche ent. Zeitschr. 1900, n. sp.
Dindymus decolor, N. Guinea, BREDDIN, p. 173, t. c., n. sp.
Megadysdercus subg. n. of *Dysdercus*, for *D. mesiostigma* Dist., BREDDIN, p. 162, Abh. Senckenb. Ges. xxv.
Myrmoplasma potteri, Abyssinia, MARTIN, p. 20, Bull. Mus. Paris 1900, n. sp.
Theraneis oleosa, Costa Rica, DISTANT, p. 692, Tr. ent. Soc. London 1900, n. sp.

PHYMATIDÆ.

- Macrocephalus arizonicus*, Tucson, COCKERELL, p. 66, Entomologist xxxiii, n. sp., but t. c. p. 201 said to be *uhleri* Handl.
Phymata salicis, Arizona, COCKERELL, p. 66, Entomologist xxxiii, n. sp.

BERYTIDÆ, TINGITIDÆ, ARADIDÆ.

- Alcletha* n. n. for *Dictyonota* L. & S., KIRKALDY, p. 241, Entomologist xxxiii.
Berytinus n. n. for *Berytus* L. & S., KIRKALDY, p. 241, Entomologist xxxiii.
Brachyrhynchus lignicolus, Christmas Is., KIRBY, p. 129, pl. xv, fig. 4, Monogr. Christmas Island, n. sp.

HYDROMETRIDÆ.

- Gerris femorata*, p. 163, *pulchra*, *ciliata*, p. 164, characters, BREDDIN, Abh. Senckenb. Ges. xxv.
G. severini, Congo, KIRKALDY, p. 432, Ann. Soc. ent. Belgique xliv; *G. kampaspe*, *darthula*, New Guinea, KIRKALDY, p. 805, Ann. Mus. Genova xl : n. spp.
Halobates, 500 miles from land, WALKER, p. 115, Ent. Mag. xxxvi.
Hydrometra lineata Say (omitted from L. & S. catalogue) characters, habits, egg, MARTIN, pp. 70–76, cuts. Canad. Ent. xxxii; *H. martini* n. n. for *lineata* Say nec Esch., KIRKALDY, p. 176, Entomologist xxxiii.
H. papuana, New Guinea, KIRKALDY, p. 807, Ann. Mus. Genova xl, n. sp.
Mesovelia orientalis, Sumatra, KIRKALDY, p. 808, t. c. n. sp.
Microvelia waelbroeckti, *briseis*, Congo, KIRKALDY, p. 433, Ann. Soc. ent. Belgique xliv; *M. gestroi*, p. 808, *loriae*, p. 807, New Guinea, KIRKALDY, Ann. Mus. Genova xl : n. spp.
Rhagovelia peggiae, New Guinea, KIRKALDY, p. 805, Ann. Mus. Genova xl; *R. tayloriella*, Jamaica, KIRKALDY, p. 72, Entomologist xxxiii, n. sp.
Trochopus plumbeus Uhl.=*(marinus* Carp.), KIRKALDY, pp. 70–72, Entomologist xxxiii.

REDUVIIDÆ (incl. EMESIDÆ NABIDÆ).

- N. American "Kissing bugs," HOWARD (616).
Amulius armillatus, Borneo, BREDDIN, p. 168, Abh. Senckenb. Ges. xxv, n. sp.
Arcesius longiceps var. BREDDIN, p. 171, t. c. n. sp.
Archilestidium n. g. *Acanthaepidini*, p. 175, for *A. ornatulum* n. sp. N. S. Wales, p. 176, BREDDIN, Deutsche ent. Zeitschr. 1900.
Canthesancus pirata, Celebes, BREDDIN, p. 175, t. c., n. sp.
Carthasis n. g. near *Nabis*, p. 305, for *C. rugosus* "n. sp.", Panama. pl. xix, fig. 4, CHAMPION, Biol. C. H.

- Castra* n. n. for *Cimbis* Burm. nec Lap., KIRKALDY, p. 242, Entomologist xxxiii.
- Coranus subapterus*, stridulating-organs, HANDLIRSCH, p. 129, cuts, Ann. Hofmus. Wien xv.
- Crocius* n. n. for *Crocias* 1899, BREDDIN, p. 185, Deutsche ent. Zeitschr. 1900.
- Daraza amboinensis*, Buenos Aires, BERG, p. 188, Comun. Mus. Buenos Aires i, n. sp.
- Diplacodus* n. n. for *Diplodus* Am. nec. Raf., KIRKALDY, p. 242, Entomologist xxxiii.
- Ectinoderus ruppelli*, Halmahera, BREDDIN, p. 168, Abh. Senckenb. Ges. xxv, n. sp.
- Epidius compressispinus*, Borneo, BREDDIN, p. 172, t. c., n. sp.
- Epiroderia vestita*, Java, HORVÁTH, p. 639, Semon Forschungsreisen v, n. sp.
- Ghilianella argentina*, Buenos Aires, BERG, p. 189, Comun. Mus. Buenos Aires i, n. sp.
- Gminatus nigroscutellatus*, N. S. Wales, BREDDIN, p. 179, Deutsche ent. Zeitschr. 1900, n. sp.
- Hammatocerus lunifer*, Buenos Aires, BERG, p. 187, Comun. Mus. Buenos Aires i, n. sp.
- Helonotus calcitrans*, characters, BREDDIN, p. 175, Abh. Senckenb. Ges. xxv.
- H. pustulus*, Key Is., BREDDIN, p. 182, Deutsche ent. Zeitschr. 1900, n. sp.
- Henricohahnia* n. g. *Harpactorini*, for *H. wahnschaffei* n. sp., Java, BREDDIN, p. 184, t. c.
- Isyndus brevispinus*, p. 180, *obliquispinus*, p. 181, Java, etc., BREDDIN, t. c., n. spp.
- Lyramma* n. g. *Ectrichodiini*, p. 44, for *L. vigil* n. sp., N. S. Wales, p. 45, BREDDIN, Ent. Nachr. xxvi.
- Mendola* n. g. *Ectrichodiini*, p. 177, for *M. puellula* n. sp., N. S. Wales, p. 178, BREDDIN, Deutsche ent. Zeitschr. 1900.
- Nabis lativentris*, habits, MARCHAL, p. 330, Bull. Soc. ent. France 1900.
- Oncococephalus vosseleri*, p. 247, *fasciatus*, p. 249, Algeria, REUTER, Ofv. Finska Forh. xlii, n. spp.
- Opinus subater*, Halmahera, BREDDIN, p. 165, Abh. Senckenb. Ges. xxv, n. sp.
- Panthous theses*, Borneo, Sumatra, BREDDIN, p. 174, t. c.; *P. minos*, Palawan, BREDDIN, p. 182, Deutsche ent. Zeitschr. 1900 : n. spp.
- Phorastes* n. n. for *Phorus* Stål nec Montf., KIRKALDY, p. 243, Entomologist xxxiii.
- Pirates cyaneonitens*, Halmahera, BREDDIN, p. 167, Abh. Senckenb. Ges. xxv, n. sp.
- Ploiaroides brevispina* var. n. *chobauti*, REUTER, p. 187, Bull. Soc. ent. France 1900.
- Pristhesanchus femoralis*, New Guinea, HORVÁTH, p. 640, Semon Forschungsreisen v, n. sp.
- Sastrapada brevicornis*, Borneo, BREDDIN, p. 174, Deutsche ent. Zeitschr. 1900, n. sp.
- Sinca complexa*, California, CAUDELL, p. 67, Canad. Ent. xxxii, n. sp.
- Sorglana* n. n. for *Macrophthalmus* Lap. nec Latr., KIRKALDY, p. 241, Entomologist xxxiii.
- Spheganocoris varius*, N. S. Wales, BREDDIN, p. 42, Ent. Nachr. xxvi, n. sp.
- Sphebanolestes semicroceus*, New Guinea, BREDDIN, p. 45, t. c., n. sp.
- Staliastes* n. n. for *Opinus* Stål nec Lap., KIRKALDY, p. 241, Entomologist xxxiii.
- Sycanus pallens*, Balabac Island, Borneo, BREDDIN, p. 178, Deutsche ent. Zeitschr. 1900, n. sp.
- Tiarodes kuenthali*, Batchian, BREDDIN, p. 166, Abh. Senckenb. Ges. xxv, n. sp.

Toxocampiellus n. g. near *Hagia* for *T. sanguineus* n. sp., Borneo, BREDDIN, p. 170, pl. ix, fig. 11, t. c.
Velitra albipennis, Üliasser, BREDDIN, p. 165, t. c., n. sp.

ANTHOCORIDÆ.

- Anthocoris variipes*, pl. xix, fig. 23, p. 324, *variicornis*, *rufotinctus*, fig. 24, *dentipes*, fig. 25, p. 325, Centr. America, CHAMPION, Biol. Centr.-Amer. Rhynch. ii, n. spp.
Asthenidea bifasciata, Panama, CHAMPION, pl. xix, fig. 13, p. 318, t. c. n. sp.
Cardiasethus tropicalis, pl. xix, fig. 28, *rugicollis*, p. 331, Centr. America, CHAMPION, t. c. n. spp.
Dolichomerium n. n. for *Dolichomerus* Reut. nec Macq., KIRKALDY, p. 242, Entomologist xxxiii.
Eulasiocolpus n. g. for *E. megalops* n. sp., Centr. America, pl. xix, figg. 6, 7, CHAMPION, p. 313, Biol. Centr.-Amer. Rhynch. ii.
Lasiochilooides n. g. for *L. denticulatus* n. sp., Guatemala, pl. xix, fig. 3, CHAMPION, p. 311, t. c.
Lasiochilus nebulosus Uhler to *Asthenidea*, p. 317, figure, pl. xix, fig. 12, CHAMPION, t. c.
L. punctipennis, pl. xix, fig. 1, *microps*, *reuteri*, fig. 2, p. 308, *foveicollis*, p. 309, *sulcatus*, *divisus*, p. 310, Centr. America, CHAMPION, t. c. n. spp.
Lasiocolpoïdes n. g., p. 313, for *L. ciliatus* n. sp., Guatemala, p. 314, pl. xix, fig. 8, CHAMPION, t. c.
Lasiocolpus sinuaticollis, p. 312, figure, pl. xix, fig. 5, CHAMPION, t. c.
L. minor, Panama, CHAMPION, p. 312, t. c. n. sp.
Macrotrachelia elongata, pl. xix, fig. 14, p. 319, *albonittata*, fig. 15, *nitida*, fig. 16, *thripiformis*, fig. 17, p. 320, *opacipennis*, fig. 20, p. 321, Centr. America, CHAMPION, t. c. n. spp.
Macrotracheliella n. g. for *M. levius* n. sp., Centr. America, pl. xix, figg. 21, 22, CHAMPION, p. 322, t. c.
Melanocoris n. g., p. 329, for *M. obovatus* n. sp., Guatemala, p. 330, pl. xix, fig. 27, CHAMPION, t. c.
Paratriflæpe n. g., p. 328, for *P. leviusculus* n. sp., Panama, pl. xix, fig. 26, p. 329, CHAMPION, t. c.
Piezostethus albonotatus, pl. xix, fig. 10, *bimaculatus*, fig. 11, Guatemala, CHAMPION, p. 316, t. c. n. spp.
Plochiocoris n. g., p. 314, for *Lasiochilus basalis* Uhler, figured, pl. xix, fig. 9, CHAMPION, t. c.
Poronotus, restored for *P. constrictus*, CHAMPION, p. 333, t. c.
Scoloposcelis flavicornis, pl. xix, fig. 32, CHAMPION, t. c.
Solenonotus sulcifer, figure, CHAMPION, p. 334, pl. xix, fig. 30, t. c.
S. canaliculatus, p. 334, *nigromarginatus*, p. 335, pl. xix, fig. 31, Centr. America, id. t. c. n. spp.
Triphleps pumilio, p. 327, *aterrimus*, p. 328, Centr. America, id. t. c. n. spp.

CERATOCOMBIDÆ, CIMICIDÆ, SALDIDÆ.

- Acunthia variabilis* var. n. *mendica*, REUTER, p. 156, Bull. Soc. ent. France 1900.
A. niveo-limbata, Senegal, REUTER, p. 156, t. c.; *A. (Chiloanthus) pygmaea*, Morocco, REUTER, p. 188, t. c. : n. spp.
Ceratocombus panamensis, Bugaba, CHAMPION, p. 336, Biol. Centr.-Rhynch. ii, n. sp.

- Harmatosiphon* n. g. for *Acanthia inodora* Dug., figured, pl. xx, fig. 1, CHAMPION, p. 337, t. c.
Salda signoreti, p. 339, pl. xx, fig. 2, *ventralis*, fig. 9, p. 342, characters, CHAMPION, t. c.
S. levis, pl. xx, fig. 3, p. 339, *sulcicollis*, fig. 4, *opacipennis*, fig. 5, p. 340, *comata*, fig. 6, *tropicalis*, fig. 7, p. 341, *quadrimaculata*, fig. 8, *abdominalis*, fig. 10, p. 343, Centr. America, CHAMPION, t. c. n. spp.

CAPSIDÆ.

- Amblytylus vittiger*, Algeria, REUTER, p. 152, Ofv. Finska Forh. xlvi, n. sp.
Anonychia n. g. near *Atomoscelis*, for *A. fokkeri* n. sp., Arabia, REUTER, p. 134, t. c.
Aphenophyes n. g. near *Campylomma*, p. 135, for *A. laticeps* n. sp., Algeria, p. 136, REUTER, t. c.
Atractotomus mali—(*Reduvius malinellus* Pomm.), GIARD, p. 359, Bull. Soc. ent. France 1900.
A. brevicornis, p. 140, *schmiedeknechti*, p. 141, Algeria, REUTER, Ofv. Finska Forh. xlvi, n. spp.
Brachybasia n. g. near *Megaceatum*, for *B. desertorum* n. sp., Algeria, REUTER, p. 255, t. c.
Calocoris porphyropterus var. β , REUTER, p. 158, t. c.
Camptobrochis punctulatus var. n. *beckeri*, REUTER, p. 265, t. c.
Compsidolon n. g. near *Psallus*, p. 147, for *C. elegantulum* n. sp., Syria, p. 148, REUTER, t. c. n. spp.
Globiceps subalpinus, Styria, STROBL, p. 193, Mt. Ver. Steiermark xxxvi, n. sp.
Macrotylus geniculatus, Algeria, p. 151, *montandoni*, Roumania, p. 152, REUTER, Ofv. Finska Forh. xlvi, n. spp.
Megacoleus cunealis, Algeria, REUTER, p. 153, t. c. n. sp.
Ochroderma n. g. near *Tuponia*, p. 132, for *O. fuscicornis* n. sp., Biskra, p. 133, REUTER, t. c.
Omphalonotus anomalus, Egypt, REUTER, p. 155, t. c. n. sp.
Oncotylus bolivi, Spain, REUTER, p. 261, t. c. n. sp.
Orthopidea n. g. near *Plagiognathus*, p. 138, for *O. fuscocephalus* n. sp., Algeria, p. 139, REUTER, t. c.
Orthotylus marginalis var. n. *oraniensis*, REUTER, p. 155, t. c.
O. viridipunctatus, Roumania, id. p. 154, t. c.; *O. gracilis*, Algeria, REUTER, p. 263, t. c. : n. spp.
Pachytomella anescens, Algeria, REUTER, p. 157, t. c. n. sp.
Paramixia n. g. near *Amixia*, for *P. suturalis* n. sp., Nile Valley, REUTER, t. c.
Phylidea n. g. near *Phylus*, p. 149, for *P. femoralis* n. sp., S. France, p. 150, REUTER, t. c.
Phylus breviceps, Syria, REUTER, p. 150, t. c. n. sp.
Phytocoris bleusei, p. 159, *atomophorus*, p. 160, Algeria, REUTER, t. c.; *P. desertorum*, p. 251, *albohirsutus*, p. 252, Algeria, REUTER, t. c.; *P. retamea*, Algeria, REUTER, p. 266, t. c. : n. spp.
Plagiognathus fulvipennis var. n. *diversicornis*, REUTER, p. 140, t. c.
P. pallidus, Algeria, REUTER, p. 257, t. c. n. sp.
Plagiotylus dispar, Syria, REUTER, p. 156, t. c. n. sp.
Pronototropis longicornis, Syria, REUTER, p. 259, t. c. n. sp.
Psallus pici, *divergens*, p. 142, *pulchellus*, p. 143, Algeria, *fokkeri*, Iviça, p. 144, *ericetorum*, Corfu, p. 145, *vicinus*, Mallorca, p. 146, REUTER, t. c. n. spp.
Solenoxyphe reticulatus, Wallachia, REUTER, p. 260, t. c. n. sp.
Sthenarus fuscicornis, p. 136, *flavipes*, p. 137, Algeria, REUTER, t. c. n. spp.

Trigonotylus pallidicornis, Algeria, REUTER, p. 161, t. c. n. sp.
Tuponia montandoni, Roumania, REUTER, p. 131, t. c. n. sp.

HYDROCORISÆ.

Testes of *Zaitia*; MONTGOMERY (921).
Anisops aphrodite, Congo, KIRKALDY, p. 435, Ann. Soc. ent. Belgique xliv, n. sp.
Belostoma gestroi, S. America, MONTANDON, p. 537, Ann. Mus. Genova xl, n. sp.
Corixa and *Sigara*; stridulating organs, HANDLIRSCH, pp. 134–141, pl. vii, Ann. Hofmus. Wien xv.
Corixu lateralis Leach = (*hieroglyphica* Duf.), KIRKALDY, p. 10, Entomologist xxxiii.
Enithares indica = (*Not. abbreviata* Kirby), *E. brasiliensis* = (*Bothronotus grandis* Fieb.), KIRKALDY, p. 10, t. c.
Laccotrephes papuus, New Guinea, MONTANDON, p. 539, Ann. Mus. Genova xl, n. sp.
Limnocoris volxemi, characters, MONTANDON, p. 421, Termes. Fuzetek xxvii.
L. horvathi, Peru, id. p. 420, t. c. n. sp.
Macrocoris parviceps, E. Africa, MONTANDON, p. 422, t. c. n. sp.
Naucoris cimicoides, stridulation, HANDLIRSCH (555).
Notonecta triangularis Guer. = (*simplex* Kirby 1891) and *templetonii* Kirby referred to *Enithares*, *N. indica* L. = (*americana* Fab. and *unifasciata* Guer.), KIRKALDY, p. 10, Entomologist xxxiii.
Nychia marshalli var. n. *sappho*, KIRKALDY, p. 809, Ann. Mus. Genova xl.
Palaeoheteroptera and *Palaeoneridoidea* n. genn., vide Palaeoentomology p. .
Ranatra linearis, oviposition, ENOCK, p. xii, P. ent. Soc. London 1900, and p. 161, Ent. Mag. xxxvi; *R. linearis*, defensive attitude, PLATEAU (1044).

HEMIPTERA-HOMOPTERA.

[The following memoirs relate to *Hemiptera-Homoptera*, viz.:—ANNANDALE (32), BAKER (55, 56, 57), BALL (58, 59, 60), BREDDIN (172), DISTANT (328, 330), FABRE (385), FOWLER (511), GREEN (526), GRUNER (542), HANDLIRSCH (554, 555), HANSEN (562), HORVÁTH (605), KIRBY (725), KIRKALDY (729, 730, 733), MATSUMURA (866, 868), MELICHAR (891, 892, 893), OSBORN (967, 969, 970, 971), PAZLAVSKY (981), STROBL (1290), THEN (1313). Also *Polydidae* p. 331, *Aphidae* p. 331, *Aleyrodidae* p. 332, and *Coccoidea* p. 332.]

Antennæ etc.; translation of HANSEN'S 1890 paper, HANSEN (562).

CICADIDÆ.

Malay method of attracting *Dundubia*, ANNANDALE, P. Zool. Soc. London 1900, pp. 859–862.
Cicada sinclairii, attacked by *Cordyceps*, BENHAM (96).
Bæturia exhausta, characters, BREDDIN, p. 181, Abh. Senckenb. Ges. xxv, n. sp.
Cicada septendecim, brood xx in Ohio in 1900, WEBSTER, p. 638, Ent. News Philad. xi.
C. duaca, Borneo, BREDDIN, p. 180, Abh. Senckenb. Ges. xxv, n. sp.
Coemopaltria alfura, Celebes, BREDDIN “ 177, pl. ix, fig. 12, t.

- Dorachosa explicata*, figured, pl. vi, fig. 14, DISTANT, Biol. Centr.-Amer. Rhynch. Homopt. i.
Fidicina oleacea referred to *Cicada* and figured, p. 42, pl. vi, fig. 17, *F. amœna*, fig. 15, *cachla*, fig. 16, figured, DISTANT, Biol. Centr.-Amer. Rhynch. Homopt. i.
Pomponia diffusa, Borneo, BREDDIN, p. 179, Abb. Senckenb. Ges. xxv, n. sp.
Talainga chinensis, Fokien, DISTANT, p. 209, Entomologist xxxiii, n. sp.

FULGORIDÆ (s. l. incl. FLATIDÆ, etc.).

- The *Fulgoridæ* of Japan, MATSUMURA, Ent. Nachr. xxvi, pp. 205–213 and 257–269.
 The prolonged head used for jumping, ANNANDALE, p. 866, P. Zool. Soc. London 1900.
Acanalonia virescens figured, pl. vii, fig. 7, p. 49, FOWLER, Biol. Centr.-Amer. Rhynch. i.
A. dubia, p. 46, pl. vii, fig. 1, *panimor*, fig. 2, *caelata*, fig. 3, p. 47, *pinniformis*, fig. 4, *affinis*, fig. 5, *gaumeri*, fig. 6, p. 48, *delicatula*, fig. 8, *concinnum*, fig. 9, p. 49, Centr. America, FOWLER, t. c. n. spp.
Apateson n. g. *Ricanianæ*, for *A. albomaculatum*, n. sp., Centr. America, pl. viii, fig. 15, FOWLER, p. 70, t. c.
Armacia consorina, characters, BREDDIN, p. 196, Abb. Senckenb. Ges. xxv.
Bennia olivacea, Japan, MATSUMURA, p. 213, Ent. Nachr. xxvi, n. sp.
Bidis aristella, Christmas Is., KIRBY, p. 136, pl. xv, figg. 12, 13, Monogr. Christmas Island, n. sp.
Bladina magnifrons, figured, pl. viii, fig. 14, FOWLER, p. 69, Biol. Centr.-Amer. Rhynch. Homopt. i.
Chlorionidea testacea, Japan, MATSUMURA, p. 257, Ent. Nachr. xxvi, n. sp.
Cixiopsis n. g. *Dictyopharida*, p. 207, for *C. punctatus*, n. sp., Japan, p. 208, MATSUMURA, t. c.
Cladypha bugabensis, Panama, pl. vi, fig. 12, *rufivena*, Mexico, fig. 11, p. 44, FOWLER, Biol. Centr.-Amer. Rhynch. Homopt. i, n. spp.
Colgar n. n. for *Atella* Stål nec Doubl., KIRKALDY, p. 242, Entomologist xxxiii.
Conicoda n. g. *Delphacides*, p. 258, for *C. graminea*, p. 259, *nigra*, p. 260, n. spp., Japan, MATSUMURA, Ent. Nachr. xxvi.
Dascalia nietoi, Mexico, FOWLER, p. 59, pl. vii, fig. 26, Biol. Centr.-Amer. Rhynch. Homopt. i, n. sp.
Delphacinus alpinus, Styria, STROBL, p. 203, Mt. Ver. Steiermark xxxvi, n. sp.
Derbe westwoodi, Centr. America, FOWLER, p. 71, pl. viii, fig. 16, Biol. Centr.-Amer. Homopt. i, n. sp.
Diceranotropis albovittata, Japan, MATSUMURA, p. 269, Ent. Nachr. xxvi, n. sp.
Dictyophara pallida, note, p. 43, pl. v, figg. 1–6, Ind. Mus. Notes v.
D. orbiculata, Mexico, DISTANT, p. 41, pl. vi, fig. 9, Biol. Centr.-Amer. Rhynch. Homopt. i, n. sp.
Dictyopharoides n. g. for *D. tenuirostris*, n. sp., Mexico, pl. vi, fig. 10, FOWLER, p. 44, Biol. Centr.-Amer. Rhynch. Homopt. i.
Epeurus n. g. near *Euryysa*, for *E. nawai*, n. sp., Japan, MATSUMURA, p. 261, Ent. Nachr. xxvi.
Eurybrachys westwoodi Kirb., referred to *Messena*, KIRKALDY, p. 294, Entomologist xxxiii.
Flatidae and subfamilies discussed, FOWLER, p. 45, Biol. Centr.-Amer. Rhynch. Homopt. i.

- Flata conspersa*, note, p. 54, figure, pl. vii, fig. 17, FOWLER, t. c.
- F. championi*, p. 51, pl. vii, fig. 10, *rotundior*, fig. 11, *punctata*, *rufocinctata*, fig. 12, p. 52, *monticola*, fig. 13, *corrupta*, fig. 14, *regularis*, fig. 15, *perpusilla*, fig. 16, p. 53, Centr. America, FOWLER, t. c. n. spp.
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The locomotion of young *Coccidae*, REH (1087).

Mode of mounting for microscope, GREEN (523).

Experiments as to power of resistance of *Diaspinæ*, REH (1082).

Coccidae injurious in Britain, NEWSTEAD (939).

Natural history of *Coccidae* injurious to fruit and vines in Germany, FRANK & KRÜGER (444).

The effects of *Coccidae* on vegetation, KOCHS (740).

The injuries of *Coccidae* to fruit in Germany, KRÜGER & KRÜGER (785).

The known species and the literature of Indian *Coccide*, GREEN, Ind. Mus.

Notes v, p. 1.

Coccidæ in Massachusetts, plants etc., KING, pp. 116–118, Psyche ix.

Coccidæ of the ivy in N. America, KING, pp. 214, 215, Canad. Ent. xxxii.

The *Coccide* of Brazil, HEMPEL (576).

The Encyrtid destroyers of *Coccidæ*; names of the scales and parasites, ASHMEAD (37).

Aclerda deberlestii, Italy, BUFFA (194), n. sp.

Anoplaspis n. g. type *Aspidiotus bambusarum* Cock., LEONARDI, p. 344, Riv. Patol. Veg. viii.

Anoplaspis and *Froggattiella*, queried as one, COCKERELL, p. 72, Psyche ix.

Antonina cravi, Japan, COCKERELL, p. 70, t. c. n. sp.

Aonidia, composition of genus, LEONARDI, pp. 204, 205, Riv. Patol. Veg. viii; *A.* monograph, with *Cryptoaonidia* subg. n. for *Aspidiotus hackee* Mask., LEONARDI, pp. 320–337, t. c.

A. ebeni (Green), p. 329, *messiae* (Green), p. 331, Ceylon, LEONARDI, t. c.; *A. spatulata*, p. 73, pl. c, figg. 10–13, *crenulata*, pl. d, figg. 14, 15, *messiae*, figg. 16–18, pl. e, *perplexa*, pl. e, figg. 19, 20, *planchonioides*, figg. 21–23, p. 252, Ceylon, GREEN, J. Bombay Soc. xiii : n. spp.

Apiococcus n. g. *Coccine*, p. 401, for *A. gregarius*, p. 402, *singularis*, p. 403, *asperatus*, p. 404, *globosus*, p. 406, n. spp., Brazil, HEMPEL, Revist. Mus. Paulista iv.

Aspidiotus and allies, completion of monograph of, LEONARDI (814); *A. difinis*, habitat, synonymy etc., MARLATT, Ent. News Philad. xi, pp. 425–427; *A. ostreiformis*, *pyri*, characters, synonymy, REH, p. 497, Zool. Anz. xxiii; *A. ostreiformis*, characters and synonymy, REH (1086); *A. trilobitiformis* = (*darutyi* Charm.), GREEN, p. 67, J. Bombay Soc. xiii; *A. thea* var. n. *rhododendri*, GREEN, p. 67, pl. A, figg. 2, 3, J. Bombay Soc. xiii; *A. dictyospermi arecae*, p. 68, pl. A, fig. 4, *A. orientalis* Newst. = (*osbeckia* Gr.), *A. transparens*, *destructor*, synonymy and characters, pp. 69, 70, GREEN, J. Bombay Soc. xiii; *A. dictyospermi* var. *arecae*, note, ♀, GREEN, p. 2, pl. i, figg. 1–3, Ind. Mus. Notes v; *A. inusitatus* Green, cf. *Targionia*; *A. hackee* Mask., cf. *Aonidia*; *A. bambusarum* Cock., cf. *Anoplaspis*. Synonymical list of *Aspidiotus* and allies, LEONARDI, pp. 350–363, Riv. Patol. Veg. viii; *A. perniciosus*, SJÖSTEDT (1224); *A. perniciosus*, shield, ecdysis, REH, (1084); *A. perniciosus*, structure of last segment and of that of allies, MEERWARTH (883); *A. perniciosus* Comst., life-history, REH (1085).

A. (Diapaidotius) cryptoxanthus, Japan, COCKERELL, p. 71, Psyche ix; *A. (Hemiberlesia) candidulus*, Arizona, COCKERELL, p. 130, Canad. Ent. xxxii : n. spp.

A. (Odonaspis) janeirensis, p. 500, *A. (Chrysomphalus) paulistus*, p. 504, Brazil, HEMPEL, Revist. Mus. Paulista iv : n. spp.

Asterolecanium variolosum var. n. *japonicum*, COCKERELL, p. 71, Psyche ix.

Aulacaspis boieduvalii var. n. *maculata*, COCKERELL, p. 502, Revist. Mus. Paulista iii.

Birchippia n. g., p. 450, anomalous, for *B. anomala* n. sp., Australia, pl. xi, fig. 3, p. 451, GREEN, Ann. Nat. Hist. vi.

Capulinia jaboticabe, natural history, HEMPEL (579).

C. crateriformis, Brazil, HEMPEL, p. 3, Canad. Ent. xxxii, n. sp.

Ceroplastes egbarum Cock., and *C. africanus* var. *cristatus* Green, are the same, GREEN, p. 158, Ann. Nat. Hist. v; *C. myriæ*, characters, pp. 8, 9, pl. ii, figg. 8–15, *C. rubens* Mask., queried as var., GREEN, Ind. Mus. Notes v; *C. irregularis*, number of eggs, COCKERELL, p. 201, Entomologist 1893.

C. sinensis, Italy, GUERCIO, p. 235, Bull. Soc. ent. Ital. xxxii; *C. amazonicus*, p. 454, *grandis*, p. 455, *norvegiæ*, p. 457, *communis*, p. 459, *variegatus*, p. 462, *speciosus*, p. 464, *lucidus*, p. 465, *purpureus*, p. 466, *forma*

- p. 468, *rarus*, p. 469, *cultus*, p. 470, *cuneatus*, p. 471, *formicarius*, p. 472, *rotundus*, p. 473, *simplex*, p. 475, Brazil, HEMPEL, Revist. Mus. Paulista iv : n. spp.
- Chionaspis salicisnigrae*, p. 101, *americana*, p. 102, *platani*, p. 103, characters, HUNTER, Kansas Quart. ix.
- C. separata*, India, GREEN, p. 5, pl. i, figg. 9-12, Ind. Mus. Notes v : n. spp.
- Chrysomphalus dictyospermi*, varietal synonymy, COCKERELL, p. 157, Ent. Mag. xxxvi.
- Cryptinglisia* n. g. *Lecaniina*, for *C. lounsburyi* n. sp., S. Africa, COCKERELL, p. 173, Entomologist xxxiii.
- Cryptokermes brasiliensis*, Brazil, HEMPEL, p. 398, Rev. Mus. Paulista iv, n. sp.
- Ctenochiton*? *araucariae*, Australia, GREEN, p. 449, pl. ix, fig. 2, Ann. Nat. Hist. vi, n. sp.
- Dactylopinus filamentosus* Cock.=*vastator* Mask., TINSLEY & COLLEGE, p. 64, Canad. Ent. xxxii.
- D. glacialis*, Italy, p. 248, *formicarius*, India, p. 249, NEWSTEAD, Ent. Mag. xxxvi; *D. australiensis*, Victoria, GREEN, p. 13, Victorian Natural. xvii; *D. quercus*, p. 315, *maritimus*, p. 316, California, ERHORN, Canad. Ent. xxxii; *D. irishii*, Arizona, COCKERELL, p. 129, Canad. Ent. xxxii; *D. texensis*, N. America, TINSLEY & COLLEGE, p. 65, t. c.; *D. grandis*, p. 384, *setosus*, p. 386, *secretus*, p. 387, Brazil, HEMPEL, Revist. Mus. Paulista iv; *D. grandis*, p. 395, *setosus*, p. 396, *secretus*, p. 397, Brazil, HEMPEL, Ann. Nat. Hist. vi, and Rev. Mus. Paulista iv : n. spp.
- Diaspidistis* n. g., for *D. multilobis* n. sp., Brazil, HEMPEL, p. 522, t. c.
- Diaspis piricola*, synonymy, habits, habitat, MARLATT, pp. 590-594, Ent. News Philad. xi.
- D. loranthi*, Ceylon, GREEN, p. 254, pl. f, figg. 25, 26, J. Bombay Soc. xiii; *D. arizonicus*, Arizona, COCKERELL, p. 131, Canad. Ent. xxxii; *D. australis*, Brazil, HEMPEL, p. 521, Revist. Mus. Paulista iv : n. spp.
- Eriochiton theae*, India, GREEN, p. 10, pl. ii, figg. 16-23, Ind. Mus. Notes v; *E.?* [p. 14 queried as *Ceroplastodes*] *melaleucae*, Australia, GREEN, p. 12, Victorian Natural. xvii : n. spp.
- Eriococcus*, the Australian species, FROGGATT, Agric. Gaz. N. S. W. xi, pp. 99-107, plate; *E. quercus toumeyi* subsp. n., COCKERELL, p. 594, Ent. News Philad. xi.
- E. perplexus*, p. 381, *armatus*, p. 383, Brazil, HEMPEL, Revist. Mus. Paulista iv; *E. brasiliensis* (Okll.), *perplexus*, p. 393, *armatus*, p. 394, Brazil, HEMPEL, Ann. Nat. Hist. vi, and Revist. Mus. Paulista iv : n. spp.
- Fiorinia saprosmiae*, pl. g, fig. 27, var. n. *gelonii*, fig. 28, GREEN, p. 256, J. Bombay Soc. xiii.
- F. theae*, India, GREEN, p. 3, pl. i, figg. 4-8, Ind. Mus. Notes v; *F. proboscidaria*, Ceylon, p. 256, pl. g, figg. 29-32, GREEN, J. Bombay Soc. xiii; *F. lidgetti*, Victoria, GREEN, p. 10, Victorian Natural. xvii : n. spp.
- Greeniella*, n. g. for *Aonidia corniger* Green, COCKERELL, p. 703, Amer. Natural. xxxi 1897.
- Icerya brasiliensis*, p. 370, *schrottkyi*, p. 373, HEMPEL, Revist. Mus. Paulista iv; *I. brasiliensis*, p. 389, *schrottkyi*, p. 391, Brazil, HEMPEL, Ann. Nat. Hist. vi : n. spp.
- Kermes*, notes on the genus, the young, N. American species, pp. 78-84; *K. galliformis* var. *cuerensis* n. var., p. 79, KING, Psyche ix; *Kermes*, table of N. American, COCKERELL (281).
- K. trinotatus*, N. America, BOGUE, p. 205, Canad. Ent. xxxii; *K. perryi*, Massachusetts, KING, p. 81, Psyche ix; *K. andrei*, Massachusetts, KING, p. 22, t. c. : n. spp.

- Lecanioidiaspis rugosus*, Brazil, HEMPEL, p. 407, Revist. Mus. Paulista iv, n. sp.
- Lecanium hemisphaericum*, var. *coffee*, note, GREEN, p. 7, Ind. Mus. Notes v; *L. robiniarum* var., COCKERELL & PARROTT, p. 367, Sci. Gossip vi.
- L. wattii*, India, GREEN, p. 6, pl. ii, figg. 1-5, Ind. Mus. Notes v; *L. cerasorum*, Japan, COCKERELL, p. 70, Psyche ix; *L. silveirai*, *obscurum*, Brazil, HEMPEL, p. 5, Canad. Ent. xxxii; *L. perconexum*, Brazil, COCKERELL, p. 41, Revist. Mus. Paulista iii; *L. (Calymnatus) rhizophore*, Brazil, COCKERELL, p. 501, t. c.; *L. brunfelsia*, p. 418, *gracile*, p. 419, *ornatum*, p. 421, *durum*, p. 427, *glandulosum*, p. 428, *zanthoxyllum*, p. 430, *infrequens*, p. 431, *discoides*, p. 433, *mayteni*, p. 438, *eugenia*, p. 439, *jaboticaba*, p. 443, *lanigerum*, p. 446, *campomanesiae*, p. 447, Brazil, HEMPEL, op. cit. iv : n. spp.
- Lichtensis argenteata*, p. 492, *L. attenuata*, p. 494, Brazil, HEMPEL, t. c. n. spp.
- Mytilaspis lasianthi*, p. 253, *pallida* (= *gloverii* var. olim), p. 254, Ceylon, GREEN, J. Bombay Soc. xiii; *M. indentata*, Australia, GREEN, p. 448, pl. xi, fig. 1, Ann. Nat. Hist. vi; *M. bicornis*, Victoria, GREEN, p. 9, Victorian Natural. xvii; *M. perlonga*, Brazil, COCKERELL, p. 42, Revist. Mus. Paulista iii; *M. argentatus*, Brazil, COCKERELL, p. 43, t. c. : n. spp.
- Odonaspis canaliculatus*, Ceylon, GREEN, p. 72, pl. b, figg. 6, 7, 8, c fig. 9, J. Bombay Soc. xiii, n. sp.
- Oudabilis* and *Phenacoccus*, characters and relations, males, the former a subgen. of *Dactylopius*, COCKERELL, pp. 85-87, Entomologist xxviii.
- Parlatoria*; the species and subgenera, with *websteriella* subg. n. for the *P. rizypi* group, LEONARDI, Riv. Patol. Veg. viii, pp. 203-209; *P. pergandei*, characters, HUNTER, p. 105, Kansas quart. ix.
- Paroudabilis* subgn. of *Phenacoccus*, for *P. helianthi* etc., COCKERELL, p. 87, Entomologist xxviii.
- Perissopneumon* n. g. *Monophlebides*, for *P. ferox* n. sp., India, in nests of *Oecophylla* built for the purpose of its accommodation, NEWSTEAD, p. 250, Ent. Mag. xxxvi.
- Phenacopsis* n. g., not described, for part of *Chionaspis*, COCKERELL, 1st Suppl. Check-list Cocc., p. 398 (omitted last year).
- Phenacoccus* cf. *Oudabilis*, *Paroudabilis*.
- P. artemisiae*, *stachyos*, p. 313, *bahiae*, p. 314, California, EHRHORN, Canad. Ent. xxxii; *P. spiriferus*, Brazil, HEMPEL, p. 389, Revist. Mus. Paulista iv : n. spp.
- Protopulvinaria convexa*, Brazil, HEMPEL, p. 485, Revist. Mus. Paulista iv, n. sp.
- Pseudischnaspis* n. g. for *P. linearis* n. sp., Brazil, HEMPEL, p. 506, t. c.
- Pseudoparlatoria parlatorioides*, characters and larva, COCKERELL, p. 503, Revist. Mus. Paulista iii.
- P. noacki*, Brazil, COCKERELL, p. 42, t. c., n. sp.
- Pseudoripersia* subg. n. of *Ripersia*, COCKERELL, 1st Suppl. Check-list Cocc., p. 392 (omitted last year).
- Pulvinaria phiae*, *brassiae*, *floccifera*, queried as identical, COCKERELL, p. 596, Ent. News Philad. xi; *P. floccifera* Westw., characters, GREEN, p. 7, Ind. Mus. Notes v; *P. innumerabilis*, *acericola*, natural history, HOWARD (616).
- P. pruni*, Kansas, HUNTER, Kansas quart. ix, p. 104; *P. tinsleyi*, New Mexico, KING, p. 360, Canad. Ent. xxxii; *P. ficus*, p. 486, *eugenia*, p. 488, *depressa*, p. 490, *grandis*, p. 491, Brasil, HEMPEL, Revist. Mus. Paulista iv : n. spp.
- Ripersia formicola*, habits, SMITH, p. 8, Ent. Mag. xxxvi.
- R. wammanni*, Germany, NEWSTEAD, p. 249, Ent. Mag. xxxv.

- India, GREEN, p. 37, pl. vi, figg. 5, 6, Ind. Mus. Notes v; *R. serrata*,
Trinidad, TINSLEY & COLLEGE, p. 66, Canad. Ent. xxxii : n. spp.
Solenococcus n. n. for *Solenophora*, COCKERELL, 1st Suppl. Check-list Cocc.,
p. 392 (omitted last year).
S. tuberculatus, p. 390, *baccharidis*, p. 392, Brazil, HEMPEL, Revist. Mus.
Paulista iv : n. spp.
Stigmacoccus n. g. *Coccinae*, p. 399, for *S. asper*, n. sp., Brazil, p. 400,
HEMPEL t. c.
Tachardia cydoniae, p. 410, *rubra*, p. 411, *parva*, p. 413, *rosea*, p. 414, *ingae*,
p. 415, Brazil, HEMPEL, t. c., n. spp.
Targionia, monograph, with subg. n. *Froggattiella* for *Aepidiotus inusitatus*,
Green, LEONARDI, pp. 298–320, Riv. Patol. Veg. viii.
Tectococcus n. g. *Coccinae*, for *T. ovatus* n. sp., Brazil, HEMPEL, p. 406,
Revist. Mus. Paulista iv.
Tectopulvinaria n. g. *Lecaniiinae*, p. 482, for *T. albata* n. sp., Brazil, p. 483,
HEMPEL t. c.
Walkeriana pertinax, Zomba, NEWSTEAD, p. 947, pl. lix, P. Zool. Soc.
London 1900, n. sp.
Websterilla subg. n. cf. *Parlatoria*.
Xerophilaspis parkinsoniae, Arizona, COCKERELL, p. 131, Canad. Ent.
xxxii, n. sp.
Xylococcus quercus, California, EHRHORN, p. 311, Canad. Ent. xxxii, n. sp.

ANOPLURA.

- Clinical bibliography, HUBER (618).
Hæmatopinus columbianus, N. America on *Spermophilus columbianus*,
OSBORN, p. 215, Canad. Ent. xxxii, n. sp.

(F.) NEUROPTERA.

TRICHOPTERA.

[Cf. BANKS (63, 64, 264), FABRE (385), Klapálek (734), Lameere (794), Morton (928).]

Agrypnetes curvata, Minnesota, BANKS, p. 252, Tr. Amer. ent. Soc. xxvi, n. sp.

Apatania tripunctata, Alaska, BANKS, p. 472, P. Washington Ac. ii, n. sp.
Asynarchus simplex, p. 469, *fumosus*, *flavocollis*, p. 470, *alascensis*, p. 471, Alaska, BANKS, t. c.; *A. centralis*, p. 253, *tristis*, p. 254, N. America, BANKS, Tr. Amer. ent. Soc. xxvi : n. spp.

Chaetopterygopsis apfelbecki, Bosnia, Klapálek, p. 676, Wiss. Mitt. Bosnien vii; *C. purvula*, N. America, BANKS, p. 256, Tr. Amer. ent. Soc. xxvi : n. spp.

Drusus bosnicus, Bosnia, Klapálek, p. 674, Wiss. Mitt. Bosnien vii, n. sp.
Glossosoma alascensis, Alaska, BANKS, p. 472, P. Washington Ac. ii, n. sp.

Halesus? alascensis, Alaska, BANKS, p. 471, t. c.; *H. formosus*, Colorado, BANKS, p. 255, Tr. Amer. ent. Soc. xxvi : n. spp.

Heterolectron nigripennis, p. 256, *mexicanum*, p. 257, N. America, BANKS, t. c. n. spp.

Homophylax n. g. *Limnophilides*, for *H. flavipectus* n. sp., Colorado, BANKS, p. 255, t. c.

Hydropsyche nervosa, Sarajevo, Klapálek, p. 678, Wiss. Mitt. Bosnien vii; *H. occidentalis*, *grandis*, N. America, BANKS, p. 258, Tr. Amer. ent. Soc. xxvi, n. spp.

Leptoella minuta, Washington, BANKS, p. 257, t. c. n. sp.

Leptophylax n. g. for *L. gracilis* n. sp., Minnesota, BANKS, p. 252, t. c.

Limnophilus flavicornis, case-making, FABRE (385).

L. harrimani, *kincaidi*, Alaska, BANKS, p. 468, P. Washington Ac. ii; *L. americanus*, *consimilis*, N. America, BANKS, p. 253, Tr. Amer. ent. Soc. xxvi; *L. cockerelli*, New Mexico alpine, BANKS, p. 124, Psyche ix : n. spp.

Notidobia americana, Virginia, BANKS, p. 256, Tr. Amer. ent. Soc. xxvi, n. sp.

Oecetina guttata, New Jersey, BANKS, p. 257, t. c. n. sp.

Philopotamus barrettæ, Mexico, BANKS, p. 259, t. c. n. sp.

Polycentropus variegatus, Washington, BANKS, p. 259, t. c. n. sp.

Potamorites virginica, N. America, BANKS, p. 256, t. c. n. sp.

Potamyia n. g. type *Macronema flavum* Hag., BANKS, p. 259, t. c.

Rhyacophila lanceolata, p. 2, *tecta*, p. 4, *curvata*, *scissa*, p. 5, *anatina*, *nariculata*, p. 6, *inconspicua*, p. 7, India, *japonica*, p. 3, *articulata*, p. 5, Japan, Morton, Tr. ent. Soc. London 1900; *R. mexicana*, Vera Cruz, BANKS, p. 259, Tr. Amer. ent. Soc. xxvi : n. spp.

Stenophylax pallidus, Bosnia, Klapálek, p. 673, Wiss. Mitt. Bosnien vii; *S. pacificus*, *antennatus*, Washington, BANKS, p. 254, Tr. Amer. ent. Soc. xxvi : n. spp.

Triænodes borealis, Minnesota, *flavescens*, New Brunswick, BANKS - t. c. n. spp.

NEUROPTERA-PLANIPENNIA.

[Cf. BANKS (63, 67), KIRBY (721, 725), KOLBE (749), LAMEERE (794), McLACHLAN (876), MOFFAT (915).]

Chasmoptera n. g. for *Nemoptera hutii* Westw., KIRBY, p. 462, Ann. Nat. Hist. vi.

Chrysoopa; eggs parasitised, MOFFAT (915); *C.* spp., Java, natural history, ZEHNTNER, pp. 13–18, pl. ii, figg. 28–33, Plantenluizen x.

Formicaleo morpheus, Christmas Is., KIRBY, p. 140, pl. xiv, fig. 3, Monogr. Christmas Island, n. sp.

Halter bettoni, E. Africa, KIRBY, p. 460, Ann. Nat. Hist. vi, n. sp.

Hemerobius: notes on Scottish, MORTON, pp. 30–32, Ann. Scott. Nat. Hist. 1900.

Leucochrysa mexicana, Vera Cruz, BANKS, p. 251, Tr. Amer. ent. Soc. xxvi, n. sp.

Mantispa mimetica, Borneo, McLACHLAN, p. 127, Ent. Mag. xxxvi, n. sp.

Myrmecoleon and *Formicaleo* near Berlin, REY, Berlin. ent. Zeitschr. xlv, SB. p. 49.

Myrmeleon iridescent, Christmas Is., KIRBY, p. 140, pl. xiv, fig. 4, Monogr. Christmas Island; *M. texanum*, Galveston, BANKS, p. 596, Ent. News Philad. xi : n. spp.

Nemopteridae; Synonymical Catalogue, KIRBY, Ann. Nat. Hist. vi, pp. 456–464.

Nemoptera remipennis, Lake Nyassa, p. 13, *togonica*, W. Africa, p. 14, *biremis*, S. Africa, p. 16, KOLBE, SB. Ges. naturf. Berlin 1900, n. spp.

Osmiyus sp., Java, natural history, ZEHNTNER, pp. 18–20, pl. i, figg. 7–10, Plantenluizen x.

Palpare papilionides var., *P. walkeri* ♀, McLACHLAN, p. 34, P. Zool. Soc. London 1900.

Panorpa signifer, Michigan, BANKS, p. 251, Tr. Amer. ent. Soc. xxvi, n. sp.

PSEUDO-NEUROPTERA.

MALLOPHAGA.

Colpocephalum pectulum, Alaska, on *Arenaria interpres*, KELLOGG & KUWANA, p. 157, pl. vii, fig. 4, P. Ac. Philad. 1900, n. sp.

Docophorus alaskensis, Alaska, on *Rhodostethia rosea*, KELLOGG & KUWANA, p. 151, pl. vii, fig. 1, t. c. n. sp.

Lipeurus macilennyi, Alaska, on *Diomedea nigripes*, KELLOGG & KUWANA, t. c. p. 155, pl. vii, fig. 3, n. sp.

Menopon corporosum, Alaska, on *Crymophilus fulicarius*, KELLOGG & KUWANA, p. 158, pl. vii, fig. 3, t. c. n. sp.

Nirmus infectus, Alaska, on *Crymophilus fulicarius*, KELLOGG & KUWANA, p. 153, pl. vii, fig. 2, t. c. n. sp.

PSOCIDÆ.

[Cf. BANKS (63, 65, 66), ENDERLEIN (377, 378), LAMEERE (794), McLACHLAN (877), RIBAGA (1110–1113).]

Brachypterous females, McLACHLAN (877).

Variation of wing-nervures, McLACHLAN, p. 14, Ent. Mag. xxxvi.

Internal anatomy of *Trichopsocus dalii*, RIBAGA (1112).

The *Psocidae* of Italy: list of 38 species with notes, RIBAGA, Riv. Patol. Veg. viii, pp. 375–386.

- Amphigerontia bicolor*, p. 144, pl. ix, fig. 9, *cinctipes*, fig. 10, *hemiphæoptera*, fig. 11, p. 145, with var. *hyalina*, p. 146, ENDERLEIN, Zool. Jahrb. Syst. xiv, n. spp.
- Berkaiua prisca* in England, McLACHLAN, pp. 220, 221, Ent. Mag. xxxvi.
- Ectopsocus berlesii*, Italy, RIBAGA, p. 364, Riv. Patol. Veg. viii, n. sp.
- Elipsocus viridimicans*, Peru, ENDERLEIN, p. 155, pl. ix, fig. 22, Zool. Jahrb. Syst. xiv, n. sp.
- Epipsocus*; characters, comparison of living and amber species, ENDERLEIN, pp. 108–110, Berlin. ent. Zeitschr. xl.
- E. nepos*, Peru, ENDERLEIN, p. 111, t. c. figures, pl. ix, figg. 15, 16, p. 150, Zool. Jahrb. Syst. xiv, n. sp.
- Graphocæcilius* n. g. *Cæciliini*, p. 155, for *G. trypetoides* n. sp., Peru, p. 156, pl. ix, fig. 23, ENDERLEIN, t. c.
- Ischnopteryx* n. g. *Thrysophorini*, for *I. calocoroides* n. sp., Peru, pl. viii, fig. 2, ENDERLEIN, p. 139, t. c.
- Neopsocus callanganus*, Peru, ENDERLEIN, p. 147, pl. ix, fig. 12, t. c. n. sp.
- Neurostigma* n. g. *Peripsocini*, p. 157, for *N. chaetocephalum* n. sp., Peru, p. 158, pl. ix, fig. 24, ENDERLEIN, t. c.
- Polypsocus lunulatus*, Peru, ENDERLEIN, p. 154, pl. ix, fig. 21, t. c. n. sp.
- Psocathropos* n. g., p. 156, for *P. lachlani* n. sp., Italy, p. 157, pl. vii, RIBAGA, Riv. Patol. Veg. viii.
- Psocinella* n. g. near *Dorypteryx*, p. 431, for *P. slossonæ* n. sp., Florida, p. 432, BANKS, Ent. News Philad. xi.
- Psocus oregonus, virginianus*, N. America, *barretti*, Mexico, BANKS, p. 239, Tr. Amer. ent. Soc. xxvi; *P. ochraceocristatus*, pl. viii, fig. 13, with var. *conjugens*, Peru, ENDERLEIN, p. 146, Zool. Jahrb. Syst. xiv : n. spp.
- Ptiloneura* n. g., p. 147, *Cæciliini*, for *P. bidorsalis* with var. *octoplumosa* n. sp., Peru, p. 149, pl. ix, fig. 14, ENDERLEIN, t. c.
- Ptilopsocus* n. g. *Cæciliini*, p. 150, for *P. fuscus*, pl. ix, fig. 17, *desectus*, fig. 18, p. 151, *quadriguttatus*, fig. 19, *griseolineatus*, fig. 20, p. 152, n. spp., Peru, ENDERLEIN, t. c.
- Teratopsocus maculipennis* a brachypterous form of *Graphopsocus cruciatus*, McLACHLAN, Ent. Mag. xxxvi, p. 6.
- Thrysophorus metallicus*, Peru, ENDERLEIN, p. 138, pl. viii, fig. 1, Zool. Jahrb. Syst. xiv, n. sp.
- Thrysopscus* n. g., p. 140, for *T. peruanus*, p. 141, pl. viii, fig. 3, *psocooides*, p. 143, with var. *pedunculata*, fig. 7, *duplicostata*, fig. 8, p. 144, n. spp., Peru, ENDERLEIN, t. c.; *T. bellus* (MacL.) var. n. *fuscoignatus*, ENDERLEIN, p. 142, pl. viii, fig. 4, t. c.
- Troctes bicolor*, p. 559, *niger*, p. 60, N. America, BANKS, Ent. News Philad. xi, n. spp.

TERMITIDÆ.

[Cf. ERRINGTON (379), FAIRCHILD & COOK (388), GOUNELLE (515), HEYMONS (591), KNOWER (738), SJÖSTEDT (1221), WASMANN (1070, 1378).]

Monograph of African Termitidæ, 82 species, SJÖSTEDT, Svenska Ak. Handl. xxxiv, No. 4. We mention below only the new species given in this important article: it deals with 82 species, and includes a bibliography of Termitid literature from other parts of the world supplementary to that of Hagen.

Embryology, KNOWER (738), HEYMONS (591).

Production of sound, GOUNELLE (515).

Note on habits of *Termes carbonarius*, ERRINGTON (379).

The structure of a termitarium sp. ?, in India, RODON, p. 363, J. Bombay Soc. xiii.

Termites and fungi, HOLTERMANN (598).

W. African Termites and their fungi, FAIRCHILD & COOK (388).

Coleoptera frequenting termitaria in S. Africa, PÉRINGUEY, pp. 66–68, Ann. Soc. ent. France lix.

Termitophilous Diptera in S. Africa, WASMANN (1378).

Acanthotermes n. g., p. 54, for *Termes militaris* Hag., etc., SJÖSTEDT, Svenska Ak. Handl. xxxiv, No. 4.

Calotermes camerunensis (= *robustus* Sjöst. 1897), p. 39, *havilandii* (= *mesticus* Sjöst. nec Hav.), p. 43, Africa, SJÖSTEDT, t. c. n. spp.

Coptotermes raffrayi, Swan River, WASMANN, p. 244, P. Linn. Soc. N. S. Wales xxv, n. sp.

Eutermes trinervius, nests, habits, CLEMENTS, pp. 86–88, Tr. Manchester Micr. Soc. 1899.

Hodotermes wasmanni, N. Africa, SJÖSTEDT, p. 33, Svenska Ak. Handl. xxxiv, No. 4, n. sp.

Termes angustipennis, p. 115, Africa, SJÖSTEDT, t. c. n. sp.

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Embia aethiopicorum, W. Africa, KARSCH, p. 79, Ent. Nachr. xxvi, n. sp.

PERLIDÆ.

[Cf. BANKS (63), KEMPNY (688, 689), LAMEERE (794).]

The tribes and classification of *Perlidae*, BANKS, p. 240, Tr. Amer. ent. Soc. xxvi.

The *Perlidae* of Norway, 25 species, KEMPNY (688).

Acronuria pacifica, Washington, BANKS, p. 242, Tr. Amer. ent. Soc. xxvi, n. sp.

Capnura n. g. for *C. venosa*, n. sp., Washignton, BANKS, p. 245, t. c.

Chloroperla; the sexual characters, KEMPNY, pp. 91, 92, Verh. Ges. Wien l. *C. strandi*, Norway, id. t. c., p. 93; *C. minuta*, Ohio, BANKS, p. 244, Tr. Amer. ent. Soc. xxvi : n. spp.

Dictyopteryx norvegica, Norway, KEMPNY, p. 86, Verh. Ges. Wien l.; *D. irregularis*, Washington, BANKS, p. 243, Tr. Amer. ent. Soc. xxvi : n. spp.

Iogenus nubecula ?, description, with provisional name *rectus*, KEMPNY, p. 88, Verh. Ges. Wien l.

I. nansenii, Norway, id. p. 90, t. c. n. sp.

Leuctra handlirschi var. n. *teriolensis*, p. 256, *L. inermis* var. of *handlirschi*, p. 257, KEMPNY, Verh. Ges. Wien l.

L. rosinae, Tyrol, KEMPNY, p. 257, t. c. n. sp.

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Teniopteryx pacifica, *occidentalis*, Washington, BANKS, p. 244, t. c. n. spp.

EPHEMERIDÆ.

[Cf. BANKS (63), CIACCIO (259), LAMEERE (794), MOCsÁRY (913).]

Classification of *Ephemeridae* and tabulation of genera, BANKS, pp. 245–247, Tr. Amer. ent. Soc. xxvi.

Leptophlebia basalis, N. America, BANKS, p. 248, t. c. n. sp.
Callibaetis floridanus, californicus, americanus, coloradensis, p. 250,
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ODONATA.

[Cf. EAST (366), FOERSTER (431, 432), KARSCH (672), KIRBY (717, 718, 719), LAMEERE (794), LUCAS (833, 834), McLACHLAN (878), RIS (1119), RÖSSLER (1133), SJÖSTEDT (1222), THERESE VON BAYERN (1317), TOUGH (1327), TÜMPEL (1337), WILLIAMSON (1417).]

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Odonata from Cameroons, 46 spp., 14 new, SJÖSTEDT (1222); descriptions and synonymy are given for many of the species: below we record only the novelties.

Notes on 33 species found by Kükenthal in the Malay Archipelago, KARSCH, Abh. Senckenb. Ges. xxv, pp. 211-230.

List of genera of Australian *Odonata*, BILLINGHURST, pp. 5-10, Victorian Natural. xvii.

Notes on nymphs from the Bismarck Arch., *Tramea rosenbergi* etc., RIS, pp. 201-203.

The first moult, CALVERT, p. 350, Entomologist xxxiii.

Nymphs living out of water, EAST, pp. 211, 212, t. c.

Notes on respiration of nymphs, EAST (366).

Odonata eaten by birds, MOORE, p. 340, Ent. News Philad. xi.

TÜMPEL (1337) completed.

Synonymy of old English literature, LUCAS (834).

Synonymy of old British works, LUCAS, Entomologist xxxiii, fere passim.

Aeshna thomassoni, Hainan, KIRBY, p. 534, Ann. Nat. Hist. xii, n. sp.

Agrion (Cænagrion) holdereri, Centr. Asia, FOERSTER, p. 264, pl. iii, figg. 1-4, Wien. ent. Zeit. xix, n. sp.

Agrionoptera; character of the allied genera, KARSCH, pp. 221-230, Abh. Senckenb. Ges. xxv; two species only, RIS, pp. 182, 183, Arch. Naturg. lxvi.

Anatya spuria, theresiae, Colombia, SELYS, p. 264, and 260, pl. iii, figg. 3, 4, Berlin. ent. Zeitschr. xlvi, n. spp.

Anax selysi, New Guinea, FÖRSTER, p. 88, Termea. Fuzetek xxiii, n. sp.

Apeleutherus n. g. near *Thermorthemis*, p. 73, for *A. strachani*, n. sp.,

Sierra Leone, p. 74, pl. ii, fig. 4, KIRBY, Ann. Nat. Hist. vi. *Argiocnemis martini*, Bismarck Arch., RIS, p. 199, Arch. Naturg. lxvi, n. sp. *Beblecia* n. g. near *Trithemis* for *B. adolescens* n. sp., Sierra Leone, KIRBY, p. 71, Ann. Nat. Hist. vi.

Camacinia harmandi, Sikkim, MARTIN, p. 103, Bull. Mus. Paris 1900, n. sp.

Cænagrion glaucum, Cameroons, SJÖSTEDT, p. 61, Bih. Svenska Ak. xxv, no. 2, n. sp.

Cratilla n. g. for *Orthemis metallica* Brauer, KIRBY, p. 542, Ann. Nat. Hist. v.

Enallagma cyathigerum var. figg. McLACHLAN, p. 111, Ent. Mag. xxxvi; *E. annexum, caloerti*, distinguished, WILLIAMSON, p. 455, pl. ix, Ent. News Philad. xi.

E. anna, N. America, WILLIAMSON, p. 455, pl. ix, figg. 1, 2, t. c., n. sp.

Epitheca bimaculata, habits, FRÖHLICH, pp. 379-382, Ent. Nachr. xxvi.

Gomphus cornutus, Illinois, TOUGH, p. 17, Mem. Chicago ent. Soc. i, n. sp.

Gyracantha, validity discussed, p. 91, *G. rosenbergi*, characters, p. 101, FÖRSTER, Termea. Fuzetek xxiii.

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- Karechia* n. g. near *Gynacantha*, p. 91, for *K. cornuta*, p. 94, *angulata*, p. 96, n. spp., New Guinea, FÖRSTER, Termes. Fuzetek xxiii; *Karechia* is synonym of *Gynacantha*, KARSCH, p. 213, with note on classification of subfam. *Libellulinæ*, p. 217, Abh. Senckenb. Ges. xxv.
- Lestes sponsa*, nymph, LUCAS, p. 142, Entomologist xxxiii.
- Leucorrhinia dubia*, migration, IMMS, p. 189, Ent. Mag. xxxvi.
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- Libellula quadrimaculata*, migrations, McLACHLAN (878); *L. quadrimaculata* swarm in England, LUCAS (833); swarm in Antwerp, Ent. Nachr. xxvi, p. 253.
- Macromia selysi*, Sierra Leone, KIRBY, p. 77, Ann. Nat. Hist. vi; *M. terpsichore*, New Guinea, FÖRSTER, p. 86, Termes. Fuzetek xxiii : n. spp.
- Mesothemis mithroides*, Colombia, BRAUER, p. 266, cut p. 261, pl. iii, fig. 5, Berlin. ent. Zeitschr. xlvi, n. sp.
- Micrathyria septima*, SELYS, p. 265, pl. iii, fig. 6, Berlin. ent. Zeitschr. xlvi, n. sp.
- Monocoloptera* n. g. near *Agrionoptera*, p. 228, for *M. kukenthali*, n. sp. Borneo, p. 229, KARSCH, Abh. Senckenb. Ges. xxv.
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- Neophlebia camerunensis*, W. Africa, SJÖSTEDT, p. 36, Bih. Svenska Ak. xxv No. 2, n. sp.
- Nesocordulia rubricauda*, Madagascar, MARTIN, p. 108, Bull. Mus. Paris 1900, n. sp.
- Nesoxenia* listed, RIS, p. 181, Arch. Naturg. lxvi.
- Neurocena* n. g. for *Zygonyx ida* Hag., KIRBY, p. 541, Ann. Nat. Hist. v.
- Neurothemis oculata* var., RIS, p. 178–180, Arch. Naturg. lxvi.
- Orthetrum julia*, Sierra Leone, KIRBY, p. 75, pl. ii, fig. 3, Ann. Nat. Hist. vi, n. sp.
- Perithemis intensa* var. n. *californica*, MARTIN, p. 104, Bull. Mus. Paris 1900.
- Phaon camerunensis*, W. Africa, SJÖSTEDT, Bih. Svenska Ak. xxv No. 2, p. 48, n. sp.
- Phyllogomphus cethiops* ♂ described, MARTIN, p. 105, Bull. Mus. Paris 1900.
- Platycnemis pennipes*, nymph, LUCAS, p. 142, Entomologist xxxiii; variation due to age, BENTIVOGLIO, p. 91, Atti Soc. Modena xxxiii.
- Pseudagrion flavipes*, Cameroons, SJÖSTEDT, Bih. Svenska Ak. xvi No. 2, p. 59, n. sp.
- Pseudolestes*, n. g., aberrant, p. 537, for *P. mirabilis* n. sp., Hainan, p. 538, pl. xii, fig. 4, KIRBY, Ann. Nat. Hist. v.
- Pseudomacromia* and allies: *P. speciosa* etc., indicated as n. g., SJÖSTEDT, pp. 26–28, Bih. Svenska Ak. xxv No. 2.
- P. hova*, Madagascar, p. 105, *natalensis*, Natal, *viridescens*, Madagascar, p. 106, *atlantica* (Selys) Canaries, p. 107, MARTIN, Bull. Mus. Paris 1900, n. spp.
- Pseudophaea decorata?* figure, pl. xii, fig. 2, p. 536, KIRBY, Ann. Nat. Hist. v.
- Rhinocypha fulgidipennis*, note, McLACHLAN, p. 114, Ent. Mag. xxxvi.
- R. whiteheadi*, Hainan, KIRBY, p. 536, pl. xii, fig. 4, Ann. Nat. Hist. v, n. sp.
- Rhyothemis*; the valid species, RIS, pp. 177, 178, Arch. Naturg. lxvi.
- Schizonyx*; is valid, characters, KIRBY, Ann. Nat. Hist. v, p. 541.
- Schizothemis* n. g., p. 23, near *Pseudomacromia*, for *S. flavicosta* n. sp., Cameroons, p. 24, SJÖSTEDT, Bih. Svenska Ak. xxv No. 2.
- Selysioneura* n. g. near *Protoneura* for *S. cervicornu* n. sp., New Guinea, FÖRSTER, p. 106, Termes. Fuzetek xxiii.

- Sympetrum striolatum* var., LUCAS, p. 139, pl. iv, nymph, p. 142, Entomologist xxxiii; *S. flaveolum* var., McLACHLAN, p. 209, Ent. Mag. xxvi. *Sympycna annulata* race *gobica*, p. 258, pl. iii, fig. 7, *S. fusca* in Wallis, p. 261, pl. iii, fig. 5, FÖRSTER, Wien. ent. Zeit. xix.
- Tachopteryx thoreyi*, note on, WILLIAMSON, p. 398, Ent. News Philad. xi.
- Tetrahemis biroi*, p. 82, *braueri*, p. 85, New Guinea, FÖRSTER, Termes. Fuzetek xxiii, n. spp.
- Thaumatoneura inopinata*, habitat Panama not Asia, McLACHLAN, p. 189, Ent. Mag. xxvi.
- Thermochoria picta*, Cameroons, SJÖSTEDT, p. 21, Bih. Svenska Ak. xx No. 2, n. sp.
- Thermorthemis austeni*, Sierra Leone, p. 72, pl. ii, fig. 1, *monteiroi*, Angola, p. 73, KIRBY, Ann. Nat. Hist. vi.
- Tragogomphus* n. g. *Gomphidae* near *Neurogomphus*, for *T. aurivillii* n. sp., Cameroons, SJÖSTEDT, Bih. Svenska Ak. xxv No. 2.
- Tramea rosenbergi* varr., RIS, p. 176, Arch. Naturg. lxvi.
- Trithemis trivialis*, generic position discussed, KIRBY, p. 531, Ann. Nat. Hist. v.
- T. kalula*, pl. ii, fig. 2, *serva*, Sierra Leone, KIRBY, p. 69, Ann. Nat. Hist. vi; *T. violacea*, Cameroons, SJÖSTEDT, p. 13, Bih. Svenska Ak. xx No. 2 : n. spp.
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- Zygonyx*; allies discussed, KIRBY, pp. 539-542, Ann. Nat. Hist. v.

THYSANOPTERA.

Thrips attacking leguminous plants, THEOBALD (1315).

(G.) *APTERA.***THYSANURA.**

[Cf. GIARDINA (505), LÉCAILLON (804, 805), SILVESTRI (1216), SKORIKOW (1227, 1229).]

Ovaries and oogenesis, *Campodea*, LÉCAILLON (804).

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Scales of *Thysanura* and *Collembola*, BRYAN, pp. 152–4, Sci. Gossip vii. *Japyx dux*, Buchara, SKORIKOW, p. 320, pl. vii, Annuaire Mus. St Petersb. v, n. sp.

Machilis; development of pattern, pp. 242, 243 and 257–259, natural history, egg, pp. 259, 260, GIARDINA, Illustr. Zeitschr. Ent. v; *M. maritima*, habits, IMMS, p. 188, Ent. Mag. xxxvi.

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[Cf. ABSOLON (5–10), BÖRNER (154), FOLSOM (433), HARVEY (567), LIE-PETTERSEN (822), PLATEAU (1043), PROWAZEK (1058), SCHÄFFER (1150), SKORIKOW (1226, 1228, 1229), WAHLGREN (1361–1363), WILLEM (1415, 1416).]

Arctic *Collembola*, Jan Mayen and East Greenland, WAHLGREN (1361).

Spitzbergen *Collembola* with historical and distributional notes and tables, and remarks on characters, 10 species, SKORIKOW, Annuaire Mus. St. Petersb. v, pp. 190–209, plate and map.

Collembola from Franz-Josef Land, 7 species, CARPENTER, P. Dublin Soc. ix, pp. 271–278, cuts.

The geographical distribution of European *Collembola*, SKORIKOW (1229). Embryology and morphology of *Collembola*, especially *Isotoma*, PROWAZEK (1058).

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An overlooked paper by Koch (1840) with genera *Paidium* and *Blax* in Fürnrohr's Regensburg etc., McLACHLAN, p. 244, Ent. Mag. xxxvi.

Achorutes dubius var. n. *concolor*, CARPENTER, p. 272, P. Dublin Soc. ix; *A. sigillatus* var. *stygius* n. var., ABSOLON, p. 268, Zool. Anz. xxiii.

A. affinis, carolinae, Germany, SCHÄFFER, p. 250, Jahresh. Ver. Wurttemb. lvi; *A. tigrina*, N. America, HARVEY, p. 552, Ent. News Philad. xi : n. spp.

Aphorura octopunctata var. n. *edenticalata*, WAHLGREN, p. 357, Ofv. Ak. Forh. lvi; *A. armata* var. n. *multipunctata*, *stalagmitorum*, p. 406, *A. sibirica*, characters, p. 409, ABSOLON, Zool. Anz. xxiii.

- A. spelaea*, Moravia, ABSOLON, p. 411, Zool. Anz. xxiii; *A. paradoxa*, p. 246, *hamanni*, p. 248, Germany, *folsomi* = (*inermis* Fols.) p. 249, SCHÄFFER, Jahresh. Ver. Württemb. lvi : n. spp.
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- E. lonbergi*, Volga, WAHLGREN, p. 847, Ofv. Ak. Forh. lvi; *E. (Sinella) agilis*, N. America, HARVEY, p. 549, pl. xv, fig. 2 : n. spp.
- Eusminthurus* subg. n., cf. *Sminthurus*.
- Heteromurus* Wank. = (*Templetonia* Lubb.), ABSOLON, p. 192, Zool. Anz. xxiii.
- Iosotoma stagnalis* with var. *tenebricola*, Belgium, WILLEM, p. 28, Ann. Soc. ent. Belgique xliv; *I. janmayensis*, Jan Mayen, WAHLGREN, p. 354, Ofv. Ak. Forh. lvii; *I. brevicauda*, Franz-Josef Land, CARPENTER, p. 274, P. Dublin Soc. ix; *I. pusilla*, p. 254, *muscorum*, p. 255, *neglecta*, p. 258, Germany, SCHÄFFER, Jahresh. Ver. Württemb. lvii; *I. parallela*, Patagonia, WAHLGREN, p. 268, Ent. Tidskr. xxi : n. spp.
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- Mesachorutes*, n. g. *Poduridae*, p. 266, for *M. 4-ocellatus* n. sp., Moravian caves, p. 267, ABSOLON, Zool. Anz. xxiii.
- Neanura patagonica*, Patagonia, WAHLGREN, p. 269, Ent. Tidskr. xxi, n. sp.
- Papirius fuscus* var. n. *cavernicola*, SCHÄFFER, p. 277, Jahresh. Ver. Württemb. lvi.
- Polyacanthella* redefined, WAHLGREN, p. 370, Ofv. Ak. Forh. lvii.
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- Sirodes* subg. n., cf. *Sira*.
- Sminthuride*: classification, division into *Sminthurini* and *Megalothoracini*, BÖRNER, Zool. Anz. xxiii, pp. 609, 610.
- Sminthurides* subg. n., cf. *Sminthurus*.
- Sminthurus*: tabulation of German species, with var. n.; *Eusminthurus* n. subg., p. 611, *Sminthurides*, n. subg., p. 616, BÖRNER, Zool. Anz. xxiii; *S. viridis caucasicus* n. var., KARSCH, p. 303, Ent. Nachr. xxvi.
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- Stenaphorura* n. g., p. 411, for *S. japygiformis* n. sp., Moravia, p. 412, ABSOLON, Zool. Anz. xxiii.
- Tomocerura* n. g., p. 265, for *T. picta* n. sp., Patagonia, p. 266, WAHLGREN, Ent. Tidskr. xxi.
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- T. lubbocki*, Germany, SCHÄFFER, p. 273, Jahresh. Ver. Württemb. lvi; *E. bauchkiricus*, cavern, Orenburg, SKORIKOW, p. 473, pl. xxi, Annuaire Mus. St. Petersb. iv : n. spp.
- Tullbergia arctica*, Jan Mayen, WAHLGREN, p. 359, Ofv. Ak. Forh. lvii, n. sp.
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Ancistrogaster inopinata, Costa Rica, p. 85, *intermedia*, Peru, p. 87, BURR, Ann. Nat. Hist. vi, n. spp.

Anechura ahrimanæ, Sikkim, BURR, p. 79, pl. iv, fig. 5, t. c. n. sp.

A. hermes, Sarawak, p. 99, pl. iv, fig. 1, BURR, t. c. n. sp.

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Echinosoma sekulavum, Madagascar, BORMANS, p. 441, Ann. Mus. Genova xl; *E. ? obscurum*, Pretoria, KIRBY, in Distant, Ins. transvaal. p. 12, pl. i, fig. 2 : n. spp.

Forcipula congo, W. Africa, BURR, p. 49, Ann. Soc. ent. Belgique xliv; *F. gariazzi*, Congo, BORELLI, Boll. Mus. Torino xv, No. 381; *F. americana*, p. 443, Bolivia, *decolyi*, New Guinea, p. 444, BORMANS, Ann. Mus. Genova xl : n. spp.

- Forficula auricularia*, food, KIRKALDY, p. 87, Entomologist xxxiii; *F. auricularia* in bee-hives, BUYSSON, p. 183, Bull. Soc. ent. France 1900.
- F. orientalis*, Constantinople, BURR, p. 82, pl. iv, fig. 7, Ann. Nat. Hist. vi; *F. ? ares*, Sarawak, BURR, p. 100, pl. iv, fig. 6, t. c. : n. spp.
- Gonolabis* n. g. type *Anisolabis javana*, BURR, pp. 48 & 53, Ann. Soc. ent. Belgique xliv.
- G. peringueyi*, S. Africa, p. 451, *sumatrana*, Sumatra, p. 452, BORMANS, Ann. Mus. Genova xl, n. spp.
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- Labidura nigricornis*, pl. xii, fig. 2 ♂, fig. 3 ♀, p. 142, KIRBY, Monogr. Christmas Island.
- L. inconspicua*, Pretoria, KIRBY, p. 13, pl. i, fig. 1, Distant, Ins. transvaal; *L. tenuicornis*, N. Guinea, BORMANS, p. 446, Ann. Mus. Genova xl : n. spp.
- Mecomeria modiglianii*, Mentawai Ids., BORMANS, p. 460, t. c. n. sp.
- Opisthocosmia cannes*, Assam, BURR, p. 85, Ann. Nat. Hist. vi; *O. rebus*, Java, BURR, p. 53, Ann. Soc. ent. Belgique xliv; *O. beccarii*, Sumatra, BORMANS, p. 465, Ann. Mus. Genova xl : n. spp.
- Platylabis sparattoides*, Pulo, Penang, BORMANS, t. c. n. sp.
- Psalis indica* var. *n. minor*, BORMANS, p. 447, t. c.
- P. guttata*, Mentawai Ids., p. 448, *scudder*; Paraguay, p. 449, BORMANS, t. c. n. spp.
- Sphingolabis insularis*, Pemba Is., KIRBY, p. 13, pl. i, fig. 3, Distant, Ins. transvaal, n. sp.
- Spongiphora nitidipennis*, ♂, dimensions, BORMANS, p. 455, Ann. Mus. Genova xl.
- S. rubriceps*, p. 89, *sphinx*, p. 91, Borneo, BURR, Ann. Nat. Hist. vi; *S. stella*, Mentawai Ids., BORMANS, p. 454, Ann. Mus. Genova xl : n. spp.
- Sparatta setulosa*, Sarawak, BURR, p. 92, Ann. Nat. Hist. vi, n. sp.
- Strongylopsalis* n. g. near *Carcinophora*, p. 80, for *S. inca* n. sp., Peru, p. 81, BURR, t. c.

HEMIMERIDÆ.

Synopsis of *Hemimeridae*, KRAUSS, Das Tierreich Lief. ii.

BLATTIDÆ.

[Cf. ANNANDALE (32, 33), DISTANT (320), DOMINIQUE (345), KIRBY (321), PETRUNKEWITSCH (994), SCUDDER (1182), WHEELER (1412).]

Habits of *Blattidae*; *Blattidae* of the Transvaal, DISTANT (320). The species described by Kirby, as below, are figured on pl. i of this work.

Aquatic *Blattidae*, ANNANDALE (32, 33).

Parasites of the eggs, SURVEYOR (1296).

Alimentary canal and digestion, PETRUNKEWITSCH (994).

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- Attaphila* n. g. for *A. fungicola* n. sp., Texas, with *Atta fervens*, WHEELER, Amer. Natural. xxxiv, p. 860.
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Deropeltis distanti, Pretoria, KIRBY, p. 284, t. c. n. sp.
Elliptoblatta uniformis, S. Africa, KIRBY, p. 288, t. c. n. sp.
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Nauphoeta aspersata, Pretoria, KIRBY, p. 285, Ann. Nat. Hist. v, n. sp.
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Pilema saussurei, Pretoria, KIRBY, p. 289, Ann. Nat. Hist. v, n. sp.
Phyllodromia delta, ruficeps, S. Africa, KIRBY, p. 280, t. c. n. spp.
Pronaonota cribrosa, male, KIRBY, p. 288, t. c.
Stenopilema pallicornis, Pretoria, KIRBY, p. 290, t. c. n. sp.

MANTIDÆ.

[Cf. ANNANDALE (32), KIRBY (725), REHN (1088), SJÖSTEDT (1223), SLINGERLAND (1232).]

- Flower-like *Mantidæ*, attitude and habits, ANNANDALE (32).
 Emergence from Ootheca of *Ameles spallanzanii*, GIARDINA, p. 280, Illustr. Zeitschr. Ent. v.
Charieis n. g. *Orthoderidae*, p. 36, for *C. peeli* n. sp., Somaliland, p. 37, pl. ii, fig. 4, BURR, P. Zool. Soc. London 1900.
Clidomoptera lunata Sauss., SJÖSTEDT, p. 20, pl. fig. 6, Bih. Svenska Ak. xxv No. 6.
Hierodula dispar, Christmas Is., KIRBY, p. 146, Monogr. Christmas Island, n. sp.
Idolomorpha sagittu, W. Africa, SJÖSTEDT, Bih. Svenska Ak. xxv No. 6, p. 25, n. sp.
Macrodanuria n. g. *Vatidae*, p. 22, for *M. phasmoides* n. sp., W. Africa, p. 23, pl. figg. 1, 2, SJÖSTEDT, t. c.
Mantis religiosa, habits, STICHEL, Berlin. ent. Zeitschr. xlv, SB., p. 4; abundance at Reims, etc., BELLEVoye, p. 71, Feuille Natural. xxxi; *M. religiosa* in N. America, SLINGERLAND (1232) and SCUDDER, p. 119, Psyche ix.
Miomantis lutescens, W. Africa, SJÖSTEDT, Bih. Svenska Ak. xxv No. 6, p. 15, n. sp.
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PHASMIDÆ.

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Malpighian tubes structure and function, SINÉTY (1219).
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Parthenogenesis and Thelytochy in *Leptynia*, SINÉTY (1217).

Moults of *Leptynia*, SINÉTY (1218).

Anisomorpha borellii, young and adult, GIGLIO-TOS, Boll. Mus. Torino No. 377, p. 2.

Bacillus gallicus, habits, parthenogenesis, CHURCHEVILLE, Miscell. ent. viii, pp. 3-6; *B. gallicus* in Normandy, LETACQ, Bull. Soc. Rouen xxv, p. 157.

Bacteria tridens ♀, REHN, p. 87, Tr. Amer. ent. Soc. xxvii.

Bactridium elinteria ♀ and young, GIGLIO-TOS, Boll. Mus. Torino No. 377, p. 2.

Baculum tenuescens, Florida, SCUDDER, p. 95, pl. i, fig. 1, Davenport Ac. viii, n. sp.

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Clitumnus stilpnoides, pl. xii, fig. 1, p. 147, KIRBY, Monogr. Christmas Island.

Sermyle strigata, Texas, SCUDDER, p. 94, pl. i, fig. 3, P. Davenport Ac. viii, n. sp.

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[Cf. AZAM (49), BERG (101), BLATCHLEY (126), BOLIVAR (133, 134), BORDAGE (139-142), BORDAS (147, 149, 150), BRUNNER (186, 187), BURR (196, 200-203, 983), DOMINIQUE (345), FROGGATT (463), GIARDINA (506), GIGLIO-TOS (507), GODMAN (511), HANCOCK (550-553), HOULBERT (610), HUNTER & SUTTON (629), HUTTON (632), KARSCH (677), KIRBY (720, 722, 725), KRAUSS (782), KÜNKEL (789), LUCAS (835), M'CLUNG (879), MCNEIL (880-882), REHN (1088), ROSSINSKY (1132), SCUDDER (1176-1185), SJÖSTEDT (1223), SUTTON (1297), THERESE VON BAYERN (1317), VANNEY & CONTE (1351), WHEELER (1413), ZUBOWSKY (1431).]

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Anatomy of *Brachytripes achatinus*, peculiar Malpighian tubes, BORDAS (149, 150).

Alimentary canal of *Brachytripes achatinus*, BORDAS (149).

The tunnels and nest of *Gryllotalpa*, ROSSINSKY (1132).

Arachnopsis dubius, S. India, BOLIVAR, p. 803, Ann. Soc. ent. France lxviii, n. sp.

Cophogryllus martini, S. India, BOLIVAR, p. 798, t. c. n. sp.

Corixogryllus n. g. near *Aphelinus*, p. 807, for *C. abbreviatus* n. sp., S. India, p. 808, BOLIVAR, t. c.

Ertatoderus flavipalpis, Christmas Is., KIRBY, p. 147, pl. xiii, figg. 3, 4, Monogr. Christmas Island, n. sp.

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Gryllodes viridulus, W. Africa, SJÖSTEDT, p. 29, t. c.; *G. virgulatus*, p. 797, *subopacus*, p. 798, S. India, BOLIVAR, Ann. Soc. ent. France lxviii : n. spp.

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Gryllus quadrimaculatus var. n. *apicalis*, BOLIVAR, p. 796, Ann. Soc. ent. France lxviii.

Homaloblemmus indicus, S. India, BOLIVAR, p. 800, t. c. n. sp.

Landrevus hemipterus, S. India, BOLIVAR, p. 800, t. c. n. sp.

- Liphoplus guerini*, S. India, BOLIVAR, p. 801, pl. xii, fig. 25, t. c. n. sp.
Myrmecophila nebrascensis, relations with ants, male, WHEELER (1413).
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Trigonidium gigas, S. India, BOLIVAR, p. 804, t. c. n. sp.

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Aprion suspectus ♂, BOLIVAR, p. 775, Ann. Soc. ent. France lxviii.
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Capnobotus imperfectus, Mexico, REHN, p. 89, Tr. Amer. ent. Soc. xxvii,
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Capnoptera sp., attitude and habits, ANNANDALE, p. 854, P. Zool. Soc.
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Climacoptera superba, S. India, BOLIVAR, p. 773, Ann. Soc. ent. France
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- Idionotus brunneus*, California, SCUDDER, p. 98, pl. ii, fig. 2, P. Davenport Ac. viii, n. sp.
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- Magrettia obscura*, Somaliland, BURR, p. 45, P. Zool. Soc. London 1900, n. sp.
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- Neanius pupulus*, S. India, BOLIVAR, p. 789, Ann. Soc. ent. France lxviii, n. sp.
- Nicephora* n. g. *Meconemidae*, p. 770, for *N. trigonidoides*, p. 771, *subulata*, p. 772, pl. xi, fig. 15, *mazerani*, *mirabilis*, p. 773, n. spp., S. India, BOLIVAR, t. c.
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- Orchelimum*; the genus valid, table of species, synonymy, MACNEILL, Canad. Ent. xxxii, pp. 77-83.
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- Oxylakis truncatipennis*, S. India, BOLIVAR, p. 778, Ann. Soc. ent. France lxviii, n. sp.
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- Thyreonotus corsicus* var. n. *montana*, BOLIVAR, p. 16, Ann. Sci. nat. Porto vi.
- Trigonocorypha crenulata* ♂, BOLIVAR, p. 767, Ann. Soc. ent. France lxviii.

- Turpilia ambigua*, S. India, BOLIVAR, p. 765, t. c. n. sp.
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XIV. ECHINODERMA.

BY

F. A. BATHER.

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INTRODUCTION.

I. TITLES. The large size of the present Record of *Echinoderm* literature is due partly to a desire to clear up everything from the nineteenth century, or rather from the last decade of it. This has resulted in the discovery of 113 titles omitted from previous lists, namely 1888, 1; 1890, 2; 1891, 2; 1892, 2; 1893, 1; 1894, 1; 1895, 3; 1896, 16; 1897, 28; 1898, 18; 1899, 39. But the year 1900 has itself yielded 257 works, a far larger number than any previous year. Other publications of 1900, and a few of previous years, believed to deal with *Echinoderm*, are still unseen in spite of every effort, including direct personal appeals to authors and publishers. Notwithstanding these omissions, and all uncertainty as to the date of many papers, a^e literature is traceable from 1894 onward.

It is occasionally suggested that the growing bulk of the Record might be checked by ignoring the less important publications. But it is impossible for one man to decide which papers are or are not of value for each one of his fellow-workers. The function of a Record is to indicate the contents of the literature in such a way that each reader can himself decide whether or no he wishes to see any particular publication. The inclusion of a title or of an observation in the Record does not imply (as some users of the Record think) that the article is a good one or that the observation is correct; still less is the Recorder responsible for opinions and criticisms quoted from other writers. To enforce this point, the insertion of cautionary remarks in [] has been somewhat extended in the present volume, while a rather more judicial tone than usual has been adopted in this Introduction.

II. BIOLOGY. A. It is a pity that CUÉNOT's views on Echinoderm evolution (74) should have been buried in a short-lived serial inaccessible to most zoologists. There are few now who uphold the descent of all Echinoderms from Holothurians, still fewer who, in conjunction therewith, maintain the homologies of the calycinal system in all their rigour, and the well-considered expression of these opinions by so thorough an anatomist deserved the compliment of refutation. Assuredly they in no way harmonise with the complete scheme of race-history outlined by GREGORY & BATHER (19), in which the peculiarities of Echinoderm structure and development are attributed to the fixation of the *Dipleurula* ancestor by its pre-oral lobe, a stage in which the *Pelmatozoa* remained, while the Eleutherozoan classes independently reverted to a free mode of life, a probable link being furnished by the *Edrioasteroidea*. Though retaining the pelmatozoic ancestor, implied in the usual statements of the calycinal theory, these authors adduce the evidence of fossils against the view that the apical systems of the various Classes are homogenetic. Although some observations of LUDWIG on recent *Ophiuroidea* have shown the supposed apical system to be more pronounced in the young, yet both the anatomist HAMANN (148) and the palaeontologist STUERTZ (325) deny its ancestral nature. There will of course be much dispute as to the correctness of various details in the history of the Phylum as given in the treatise (19) above referred to, but the attempt to give a complete phylogenetic classification of all genera, fossil and recent, was worth making.

The phylogeny of the *Pelmatozoa* was touched on in last year's Record (p. 5): we may now see what agreement there is concerning other Classes. GREGORY (19) lays great stress on the resemblance of *Ophiuroidea* to *Astroidea*, to which HAMANN (148) replies that the Class is no more closely related to *Astroidea* than it is to any other Class of Echinoderms. Some of the arguments most reiterated by GREGORY have been shown by his critics to be devoid of foundation, and there is no doubt but that the trend of evolution in the two Classes has been quite distinct and that no confusion need exist between their Neozoic representatives. At the same time, as insisted on by STUERTZ (325), the Palaeozoic *Ophiuroidea* approach the *Astroidea* in many important structural features; and HAMANN's vehement assertions can scarcely be reconciled with GREGORY's incontrovertible statement that both are eleutherozoic, actinogonidial, lysactinic, with ambulacral plates internal to the radial ambulacral vessels. As was to be expected, GREGORY has set aside the previous classifications of each of these Classes into a Palaeozoic and a Neozoic Order. The ancient *Astroidea* are now distributed by him among the *Cryptozonia* and *Phanerozonia* of SLADEN, a mode of treatment also adopted by STUERTZ; but there is a general opinion that these divisions are not satisfactory even for recent forms; much more careful work is needed on Palaeozoic genera before the true lines of separation can be established. The classification of *Ophiuroidea*, based on a previous one by BELL, is maintained by

GREGORY; and STUERTZ, though he criticises GREGORY'S nomenclature and certain details, accepts the essential features of it, which indeed were first enunciated by himself. The classification, however, is not truly phylogenetic and its divisions are not congruous with one another: the *Lysophiuriae* Greg. (= *Ophio-encriasteriae* Stuertz) are a primitive assemblage from which are descended the older *Streptophiuriae* (= *Protophiureae* Stuertz); these in turn seem to have given rise to three branches—"the living *Streptophiuriae*" (not further classified by GREGORY), the *Zygothiuriae*, and the *Cladophiuriae* (= *Euryalida*). These facts are obscured by the establishment of four equivalent Orders. Mention of the living *Streptophiuriae* reminds one that VERRILL (341) has made Families for most of them, and has revised the Families of *Cladophiuriae* and *Zygothiuriae*, but he confines himself to living genera, especially those of the W. Atlantic, and lays down no principles of wider application. It is to be hoped that HAMANN, in his treatment of this difficult question, will pay due attention to the extinct forms: after the publication of "The *Echinoderma*" in LANKESTER'S "Zoology" (19) no classification that omits the fossils can be considered as other than a trifling with the subject.

It is interesting to compare the classifications of the *Echinoidea* given by GREGORY (19) and LAMBERT (187). Apart from differences of opinion as to the limits of Families or the position of certain genera, the Orders of GREGORY are much the same as the Sub-orders of LAMBERT, being taken from DUNCAN & ZITTEL; but, as will be seen from a tabular statement, they are divided up differently:—

GREGORY	ORDERS OR SUBORDERS	LAMBERT
Regularia	Cystocidaroida	Plagiocysta
Endobranchiata {	Bothriocidaroida	
	Cidaroida	
	Melonitoida	
	Plesiocidaroida } Holostomata }	
Regularia	Diademoida.....	
Ectobranchiata {	Glyphostomata }	
	Gnathostomata (Zittel).....	
Irregularia	Exocysta	
	Atelostomata (Zittel).....	
		Atelo- stomata

There is here no essential discrepancy. The facts of structure are admitted, and, speaking broadly, it is agreed that the Orders form a linear evolutionary series. Consequently the various divisions represent merely grades of structure, not divergent branches, and the major lines can be drawn almost anywhere, as each author thinks best, without change in the fundamental arrangement. But no permutation will turn this into a representation of phylogenetic affinity. What must now be studied is the relation of species to species, and genus to genus, by which method alone can the true lines of descent be traced across the arbitrary and artificial barriers of the existing classifications.

B. Descending to details of Anatomy, we find no novelties under *Holothuriidea*. The elementary student of *Echinoidea* has a choice of three accounts of *Echinus esculentus*, each with its own good points (19, 59, & 75). The systematist should utilise HESSE's detailed description of the micro-structure of spines. The morphologist will find many interesting studies in the valuable memoir of LAMBERT (187) on early Mesozoic Echinoids, notably that on the coalescence of primary ambulacrals, a process which he ascribes to the preponderating growth of a tubercle on one plate causing it to overlap adjacent plates; the coalescence is therefore not due to a lateral pressure resulting from the addition of fresh ambulacrals at the apex, as supposed by LOVÉN & DUNCAN, but is a minor p.m.

caused by the superficial growth in thickness of the test. BEDFORD's (25) highly important discovery in *Asthenosoma* of a deeper nerve-layer forming ganglia on each side of the radial peri-haemal canal, demands special notice, since the lamented death of the author has deprived us of the promised memoir, in which he would doubtless have emphasized the homology of this with the deeper paired radial nerves already known in the other Echinoderm Classes. The two parts of Bronn's *Klassen und Ordnungen d. Thierreichs* published during the year contain an excellent account of the anatomy and ontogeny of recent *Ophiuroidea* by HAMANN (148), while the morphologist cannot afford to neglect the notes on Palaeozoic *Ophiuroidea* and *Asterioidea* furnished by STUERTZ (325). APOSTOLIDÉS' (17) account of *Ophiothrix* contains statements that are remarkable in another sense.

Turning to *Pelmatozoa*, we find an admirable introduction to the anatomy of *Antedon* by CUÉNOT. This however is so specialised a form that the student may be glad of the description of a simple stalked Crinoid offered by BATHER (19), who also discusses the chief modifications to which that type is subject, and in the course of his systematic account introduces many new facts. A long-standing controversy as to the presence of pores in the anal tube of fistulated Crinoids has at last been settled, so far as certain *Dendrocrinoidea* are concerned, by the detailed figures and descriptions of SPRINGER (314). The same author (315) announces discoveries concerning *Uintacrinus* for which the evidence will be given in a detailed memoir (Aug. 1901). From investigation, by numerous refined methods, of the histology of the soft tissues connecting the brachials of *Antedon*, BOSSHARD (44) concludes that the dorsal fibre-masses are not muscular, as supposed by some recent writers, but purely elastic, and in continuity with the general stroma; the interarticular ligament is of the same nature, but more compact, and opposes the pull of the ventral muscles partly by contraction from extension, partly by resistance to compression, according as it lies dorsad or ventrad to the fulcral ridge; the cirri, though united only by fibres similar to the dorsal ligament of the arms, are capable of spontaneous though sluggish movements, a fact admittedly inconsistent with the ascription of a purely elastic nature to the fibres. The paper begins with a useful summary of our present knowledge of *Antedon*'s anatomy, gives a better description of the syzygy (pp. 78-81) applied according to the proposal of (21) Zool. Rec. 1897, but repeats the old confusion between dorso-central and centro-dorsal (p. 74).

RUSSO (292) claims to have observed the rudiment of the sexual cells in *Antedon* near the wall of the posterior interradius, far away from the rudiment of the axial organ, but in connection with a special sinus and lacuna. He homologises this with the arrangement in adult holothurians, and believes it to represent the Cystid stage of organisation. The relation of this embryonic rudiment to the gonads of adult crinoids is, however, not clear. Here it is convenient to mention a physiological observation of the same writer (293). He claims that the genital organs of Holothurians [strictly of 3 spp. of *Holothuria*], when the gonads are not mature, not merely excrete the katabolic products of other tissues, but are themselves a centre of renal activity. If this be more than a particular statement of the general fact that the amoeboid cells of Echinoderms carry effete products through the walls of all the organs [cf. CUÉNOT (75) under II, c, v], then it may be regarded as confirming the homology of the Holothurian gonoduct on the one hand with the primitive nephridial pore of the anterior coelom in the *Dipleurula*, and on the other hand with the axial organ of other Echinoderms, to which organ a renal function has been assigned by KOWALEWSKY and the SARASINS. RUSSO, however, denies any connection between the gonads and the axial organ of Echinoderms.

The accounts of *Cystidea*, *Edrioasteroidea*, and *Blastoidea* in BATHER (19) are almost entirely the result of original research, and are full of new observations. A detailed redescription of *Edrioaster buchianus*, BATHER (20) gives some of the facts on which the conclusions of the Treatise (19) as to the relations of the Class are based. The extra plate noticed by ROWLEY (291) in the anal interradius of a *Pentremias elongatus*, throws light on the similar but larger structure in *Nucleocrinus*. The structures figured by SCHLUETER (298) as arms of *Lodanella* are, if arms at all, those of a Crinoid not of a Cystid; the structure of the stereom resembles that of *Craterina*.

Under the head of Variation many observations of much interest are recorded. Study of the variations in *Agaricocrinus emboldens* Miss KLEM (173) to reduce the 42 described species to 10; her account of the development is, however, vitiated by incorrect homologies, and it is not clear how much is only *a priori* speculation; work of this kind would be most valuable if conducted on strict biometric lines. From a study of many specimens of the starfish *Pycnopodia helianthoides*, RITTER & CROCKER (283) prove that the sixth ray lies in the plane of the larval organ, between rays I and II of Ludwig, and that extra rays up to a total of twenty are added adjacent to I and II on the side next the sixth ray, a bilateral symmetry of skeletal and internal structures being thus maintained; they believe that the process of budding is initiated by the water ring, the points of budding corresponding to the ends of the curved larval hydrocoel, that the multiplication of the rays is merely a continuation of the process that gives rise to the original five, that the bilateral symmetry of the adult is a continuation of that of the larva, and that the sixth ray is intimately related to the larval organ. Concerning the relations of adult to larval symmetry the views of GOTO, GRAVE (135), and MACBRIDE (214) may be compared.

C. Most of the Physiological observations recorded are of interest rather to the general biologist than to the specialist on Echinoderms; such as affect the latter have already been alluded to. UEXKUELL (333) continues his elaborate researches into the nervous reactions of Echinoids. Heliotropism in Crinoids and Blastoids can scarcely have the effect suggested by KLEM (173) owing to the diffusion, if not the complete obscuration, of daylight at the depths inhabited by those animals.

D. The classification, under the several divisions headed Bionomics, of scattered observations that would otherwise escape notice is probably no less valuable than interesting. MEAD's proof (228) that the extent and rapidity of growth in the young starfish simply depends on the amount of food it can get, and that sexual maturity comes when a certain size is reached, independently of age, carries important biological and practical consequences. He also shows that given sufficient food, the extra work entailed by the reparation of an injury does not affect the rate of growth. HUBRECHT (165) and HORST (161) contend that in *Linckia* a single arm can regenerate the whole animal. This however conflicts with the experiments of MEAD and also of Miss KING (171) on regeneration in *Asterias vulgaris*. In nature, say both these authors, an injured arm is thrown off and replaced by a fresh one; but a mutilated arm, if protected, can replace its missing portion, cannot however reproduce a disc. The disc, says Miss KING, can reproduce all arms; from an interradial cut in the disc one or more arms may grow out, thus accounting for most (?all) cases of hyperactinity; 2 rays and portion of disc minus madreporite reproduce madreporite in no fixed position; but when the authoress says that this "shows conclusively that the position of the madreporite is a variable one and does not depend on some polarity in the disc," she probably does not intend to enunciate a morphological maxim. Ingenious mutilation since such accidents do not occur in nat

is not a phenomenon of adaptation." To judge from the descriptions of the mutilations and from the diagrams, the present paper treats a starfish as though it had an almost homogeneous structure; except in one experiment where the digestive caeca were removed, we are never told the relation of the cuts or the new growths to the internal anatomy; precise experiment and microscopic observation are much needed.

The heading of section x has been altered to "Echinoderms as Geological Agents" in order to include other functions than the passive one of rock-forming. The rock described by DEECKE (84) as an "Echinoderm-brecchie" is really an Eocene conglomerate derived from the degradation of the immediately preceding Saltholm Limestone; the occurrence of the Echinoderm remains in continuous beds several centimetres thick is probably due to the sifting action of currents.

F. The most important embryological work of the year is that of GRAVE (135) on *Ophiura brevispina*, the species called *O. olivacea* in his otherwise discrepant preliminary account (110) Zool. Rec. 1899. Misfortune, however, seems to have attended his labours from first to last; not only was his memoir originally issued in such a form as to be unintelligible, but even as corrected by him there are errors in both text and plates, and, what is of more importance, his somewhat startling conclusions are based on a series of observations often separated by wide intervals, some critical stages not having been preserved. He infers from the appearances at 36 hours that the gastrula was formed by delamination from a planula. At 42 hours he finds the hydrocoel rudiment springing directly from the archenteron, and not connected with either anterior or posterior enterocoels; a pouch identified as left posterior (or hypogastric) enterocoel is constricted off from the archenteron, leaving the stomach, while the epigastric enterocoel is not seen till 48 hours and is then supposed to be the right anterior enterocoel, which has otherwise vanished. [In other echinoderms that cavity merges with the left anterior enterocoel while the epigastric or aboral coelom is derived from a distinct right posterior enterocoel.] At this stage the stone-canals connects hydrocoel and left anterior enterocoel, although the dorsal pore-canal has not been formed. Twelve hours at a most critical period are now unrepresented, and the appearances presented at 60 hours are explained by GRAVE as due to the rotation of the hydrocoel and all its 5 lobes through 180°, the first-formed lobe (No. 1 of GRAVE) having already passed through 180° from its point of origin, making "a total rotation of 360°." In other words, whereas at 48 hours lobe 3 of the hydrocoel pointed to the anterior end of the larva (or North) and the opening of the stone-canal in lobe 5 was S.S.E., now it is supposed that lobe 3 points to the posterior end or S., while the stone-canal is almost N.N.W. and between 5 and 1. In this interradius also lies the [left?] anterior enterocoel, which partly fuses with extensions from the hypogastric enterocoel to form the outer peribranchial ring, and partly sends out an additional projection to form the inner peribranchial ring, while a third portion remains as the rudiment of the axial sinus (ampulla) and is already connected, by a canal, with a pore at first on the aboral surface but at a much later stage migrating to the oral surface. If this interpretation be correct, then all the asymmetrical structures of the adult lie in the interradius 5-1, which marks the closure of the water-ring; and this also is directed towards the anterior end of the larva, identified by GRAVE with the preoral lobe, while radius 3 points to that spot on the larva originally marked by the blastopore. Hence the plane of bilateral symmetry of the adult has, owing to an alleged enormous rotation of the hydrocoel, come to coincide with that of the larva. A similar coincidence [not preceded by a similar rotation] occurs in *Asterias pallida* according to GOTO. But in *Asterina gibbosa* both GOTO and MACBRIDE place the stone-canals, axial sinus, &c. in the interradius 1-2 of

GRAVE, while the preoral lobe and union of the water-ring are in 5-1; since GRAVE has not seen the closure of the hydrocoel, it is possible that his identification of the radii is incorrect, especially as the torsion is in a contrary direction to the torsion of oral and aboral systems in *Asterina*. The many interesting speculations suggested by Dr GRAVE's inferences will be more ripe for discussion when he shall have supplied information as to the missing stages and a more detailed series of sections throughout.

Not much serious study of post-larval growth-stages was accomplished during the year, but BEDFORD (25) did what he could with insufficient material. The results of LAMBERT, MEAD, KLEM, and RITTER & CROCKER have already been noticed. A large amount of work intensely interesting to the biologist has been turned out by the experimental embryologists; but of this a sufficient account is given under II, F, viii.

III. A. Under Geographical Distribution, in which bathymetric as well as horizontal extension is included, the chief additions to knowledge are from the Antarctic and Indian Oceans, being specially connected with the voyages of ss. 'Belgica,' 'Valdivia,' and H.M.S. 'Investigator.' The rediscovery of what appears to be *Astrophiura*, though not determined as such, is an event of importance. Valuable studies on Arctic Echinoderms are numerous, but produce no startling novelty. A good deal of faunistic work has also been done in the West Indies. R. PERRIER (263, 264) describes several new genera and species of Holothurians dredged by the 'Travailleur' and 'Talisman' without giving the localities where they were found [have the labels been lost?].

III. B. Out of the mass of notes concerning fossil forms we may select for mention: the writings of FOURTAU on Egyptian Tertiary and Cretaceous *Echinoidea*, especially No. 115, in which he is assisted by GAUTHIER; OPPENHEIM's description of the fauna of the Priabona beds (251); FICHEUR (108, 109) on Algerian Cretaceous *Echinoidea*; LISSAJOUS' (19) list of Mesozoic Echinoderms near Mâcon; LAMBERT on Echinoids in the Vesulian of Indre (186) and the Lias and Infra-Lias of l'Yonne (187); ROWLEY (289-291) on Crinoids and Blastoids from the Lower Carboniferous rocks of Missouri; STÜRTZ (325) on Lower Devonian Asteroids from Bundenbach; WELLER's description (348) of a Crinoid fauna from the Niagaran of Chicago resembling that from N.W. Europe. The distribution of Echinoderms in the Chalk of S.E. England is carefully studied by DIBBLEY (92) and ROWE (288), while valuable faunal lists of the Lower Cretaceous and Jurassic of the French Alps are published by KILIAN & LORY (170). BOEHM (41) records a Blastoid from Timor; FRECH (124) one from Persia. The list of Miocene *Antedonidae*, so recently increased by NICOLAS and P. DE LORIOL, is added to by NOELLI (243), who describes several cups and centrodorsals from Piedmont.

An attempt has been made to shorten both sections of Part III by quoting, as a rule, the generic names alone; reference to these in the Systematic Part, IV, will however show what are the species dealt with in each case.

IV. Continuing the idea just mentioned, it is generally possible to discover all the species discussed in any paper, by turning first to the reference under III, noting the genera, and then turning them up in IV. Thus, under NOELLI (243) is a reference III, B, ii, d; turning to this, one learns that the paper deals with "spp. of *Pentacr.*, *Conocr.*, *Antedon*, and *Actinometra*"; looking up these genera under IV, F, one finds all the species in alphabetical order. To a less extent the same plan may be followed with the references to II. When no clue to the species is obtainable in this way, the names of the genera have been inserted after the title, and the same course has been followed when it is advisable to direct attention to an entry not otherwise indicated; see, for instance, *Acloquin* (1). Conversely, when a generic or specific name is entered und— ..

without remark, reference to the sections of Part II or III, as indicated after the Title, will generally show the nature of the quotation. Thus, it is easy to understand that the numerous names quoted from GREGORY in BATHER (19) are those of genera whose systematic position is discussed, changed, or merely fixed by that author's new classification.

The works that deal with the wider questions of taxonomy have already been alluded to under II, A, in connection with phylogeny, while those descriptive of recent or fossil faunas have been mentioned under III. A number of new species of all Classes are mentioned in CHUN; none are adequately described, but several are illustrated, and to some of the figures names are attached. If these are to rank as new species, such a mode of publication deserves censure. Part VIII of P. DE LORIOL'S Notes pour servir (207) discusses 16 species of *Echinoidea*, *Astroidea*, *Ophiuroidea*, and *Crinoidea*, both Mesozoic and Recent, 11 being new, with 2 new genera of Echinoids; the curious phrase "localité certaine" applied to the source of *Antedon doederleini* suggests that the localities of the other species are uncertain. Among *Holothurioidæ* new species are described by R. PERRIER (263, 264) who does not condescend to give illustrations any more than localities. SPANDEL (313) describes spicules of *Synapta* from the Oligocene, and claims that they are the first true Synaptid remains found fossil. Several new fossil *Echinoidea* are made known by GAUTHIER in FOURTAU (115), but since the date of this paper is 1900 and each new species is introduced as "Gauthier 1899," it is not easy to tell what is new and what is not, especially as there is nothing to distinguish the contributions of GAUTHIER from those of FOURTAU. Many new genera and species are established by LAMBERT (186, 187) and here it is even more difficult to discover the novelties; but since the latter paper is full of misprints it seems possible that the erudite author was not given the chance of correcting his proofs; his own kind help has enabled the present Record to remove some obscurities. Another valuable paper, marked by care and learning, is that of SCHLUETER (299) on species of *Briissopsis*, *Diplodetus* [n. g.], *Plesiaster*, and *Cardiaster*. It would be a great boon to the weaker brethren if these eminent palaeontologists would remember that all have not so intimate an acquaintance with the profundities of Echinoid nomenclature as to recognise a new name the moment it is printed: it is so much easier for the author of a new genus or species to affix the sign n. g. or n. sp., than for an over-worked Recorder. Other fossil Echinoids are described by FICHEUR (109), ARTHABER (124), OPPENHEIM (251), and SIMIONESCU (306), the last paper being here recorded thanks to the generosity of its author. A few new species are among the Malayan *Echinoidea* and *Astroidea* described by BEDFORD (25). The *Echinoidea* and *Ophiuroidea* of the 'Belgica' are described, but not yet figured, by KOEHLER (180). STUERTZ (325) with his usual skill has worked out some more of the wonderful Bundenbach starfish, but has been unfortunate in his new names. VERRILL'S revision of *Ophiuroidea* (341) has already been noticed: here again one finds old names said to be new, new names not said to be anything, names so confusing as *Ophiectodia* and *Ophientodia* with which even their own author seems to have struggled in vain, genera or subgenera (one is rarely clear which) sometimes with one species nominated as type, sometimes with another, sometimes with both: small wonder if the Recorder mutters "Reviser, revise thyself!". PERNER (261) following JAEKEL, has revised the nomenclature of Barrande's *Cystidea* of Bohemia, while a somewhat similar task has been performed for the *Crinoidea* by BATHER (21). Several species of *Agaricocrinus* have been revised and reduced by KLEM (173). Other fossil crinoids are described by BEEDE (28), NOELLI (243), OPPENHEIM (251), ROWLEY (289-291), WELLER (348), and SOLLAS (312). *Cicerocrinus* of the last author was almost synchronously described by Jaekel as *Lagarocrinus*. Finally, under the curious name

Paropeponema [Aesch. Agamemnon, 1447] CLARKE (68) describes an even more curious fossil.

The additions to our systematic lists may be analysed thus :—

	New genera	Altered generic names	New sub-genera	New species	New varieties
Holothurioidea	1	1	0	11	2
Echinoidea	11	1	1	68	5
Asteroidea	10	0	0	13	3
Ophiuroidea	7	2	1	16	0
Crinoidea	4	0	0	51	0
Cystidea	0	0	0	2	0
Blastoidea	0	0	0	6	0
Incertae Sedis	1	0	0	1	0
Total	34	4	2	168	10

These numbers are given with the usual reservation necessitated by the obscurity of authors; several of the names are known to be synonyms. All the generic names ever used for *Pelmatozoa*, perhaps also for *Ophiuroidea*, are believed to occur in this year's Index, which has thus a special value.

CORRIGENDA in previous Records.

Record for 1893, vol. xxx :—

- p. 11. "73. EFISIO, M. Saggio etc." should be "73. MARCIALIS, EFISIO. Saggio etc."

Record for 1897, vol. xxxiv :—

- p. 10. No. 61. p. 193 should be p. 192.
 p. 17. No. 130. pl. xxxiv should be pl. xxxv.
 p. 32. No. 306. p. 261 should be p. 254.
 p. 62. line 4. replace the paragraph by,—*Sigmodota* Studer, genotype *S. purpurea*, revived for all spp. of *Chiridota* with sigmoid spicules; ÖSTERGREN (255) Zool. Anz. xx, p. 154, footnote.

Record for 1899, vol. xxxvi :—

- p. 9. No. 1. [iii, d, iii] should be [ii, d, iii].
 No. 4. Add date (18 Aug.).
 p. 10. No. 14. Add date (15 Apr.).
 p. 12. No. 55. Reference should read "12th Ann. L. M. B. C. Rep. (Dec. 1898, reissued in) Tr. Liverp. Biol. Soc. xiii, pp. 23–27 (Sept. 1899)."
 p. 13. No. 64. See No. 74 of this Record.
 p. 19. "HOLZAPFEL, E. See STOLLER, E." add "and KAYSER (132)." Between lines 11 and 12 from bottom, insert "JAHN, J. J. See WÄAGEN & JAHN (246)."
 p. 20. line 3. dele "& HÖLZAPFEL, E."
 p. 25. No. 179. Reference should read "fasc. 1, pp. 52–62 (15 Apr.), pl. ii (issued with fasc. ii, 18 Aug.)"
 p. 30. No. 236 and p. 31 No. 245. Add date (15 Feb. 1900).
 p. 55. *Periamna* should be *Periamma*.
 p. 57. *Astrodrapis*. Insert [melius *Astrodraspis*].
 p. 94. *Caryocystis minutus*. Insert [err. pro *minutus*].

The Recorder is always glad to receive corrections, and is specially grateful when Authors, Editors, or Publishers asterisk indicating that a work has not *t*

I. TITLES.*

1. ACLOQUE, A. Faune de France.....Thysanoures, Myriopodes, Arachnides, Crustacés, Nématelminthes, Lophostomés, Vers, Mollusques, Polypes, Spongaires, Protozoaires. 18mo, 500 pp., 1664 text-figg. Paris : Baillière (1898, dated 1899). [III, A, ii. IV, A, E, *Ophioderma*.] *Echinodermes*, pp. 454-466.
2. ——. Le monde sous-marin. 8vo, 318 pp., 326 text-figg. Abbeville : Paillard (1899). [II, D, i.] Review : by C. DE KIRWAN, Rev. Quest. Sci. (2) xvii, pp. 575-588 (April, 1900.)
3. AIRAGHI, C. (4) Zool. Rec. 1899. Abstract : Boll. Com. geol. Ital. xxii, pp. 89, 90.
3. ——. Di alcuni Conoclipeidi. Boll. Soc. geol. Ital. xix, pp. 173-178, pl. i. (31 May.) [III, B, ii, d. IV, c.] Abstracts : by J. LAMBERT, Rev. paleozool. iv, pp. 178, 179 (Oct. 1900); by V[INASSA DE REGNY], Riv. ital. Pal. vi, p. 109 (Sept. 1900).
4. ——. Echinidi postpliocenici di Monteleone Calabro. Atti Mus. Milano xxxix, pp. 65-74. (June.) [III, B, ii, b. IV, c.] Abstracts : by J. LAMBERT, Rev. paleozool. iv, p. 179 (Oct. 1900); by P. E. VINASSA DE REGNY, Riv. ital. Pal. vi, p. 109 (Sept. 1900).
5. ——. Dell' *Echinolampas laurillardii* Agas. e Des. Riv. ital. Pal. v, pp. 109-111. (31 Dec. 1899, received in London 17 Feb. 1900.) [III, B, ii, e. IV, c.] Abstract : by J. LAMBERT, Rev. paleozool. iv, p. 136 (July 1900).
- ALBRECHT, E. (7) Zool. Rec. 1899. Abstract by O. BÜTSCHLI, Zool. Centrbl. vii, pp. 680, 681 (9 Oct. 1900).
- ALCOCK, A. See KOEHLER (179).
- ALESSANDRI, G. DE. Sopra alcuni fossili Aquitaniani dei dintorni di Acqui. Boll. Soc. geol. Ital. xix, pp. 549-554. (20 Dec.) [III, B, ii, d.]
- ALLEN, E. J. & TODD, R. A. The Fauna of Salcombe Estuary. J. Mar. Biol. Ass. (n. s.) vi, pp. 151-217, 1 map. (Nov.) [II, D, iii, a; vi; viii, c. III, A, ii.]
- ALMERA, J. Compte-rendu de l'excursion.....à Montcada et à Sardanyola. Bull. Soc. geol. France (3) xxvi, pp. 732-741. (Dec. 1899.) [III, B, iv, h.]
- . Compte-rendu des excursions...à Gracia et le Coll (Horta) et... à Vallcarca, au Tibidabo et à Esplugas. Bull. Soc. geol. France (3) xxvi, pp. 742-763. (Dec. 1899.) [III, B, ii, c; iv, f, h.]
10. ALMI, H. M. British American Echinoderms. Ottawa Natural. xiv, p. 56. (6 June.) [III, A, ii.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Paper or Work referred to.

The Symbols in [] refer to the divisions of the Subject-Index, II, III, IV. Those referring to the Systematic portion [IV, A-K] are inserted only when some question of definite importance to the systematist is dealt with in the work. The names of the genera mentioned in any work can generally be gathered from the lists given under Distribution [III, A or B], and the species can then be traced by turning to Section IV. Only where this was not possible have names been inserted after the title.

11. ANDERSON, A. R. S. Report of the Surgeon Naturalist for the season 1898-99. Rep. Marine Surv. India, 1898-1899, pp. 5-16. (1899.) [II, B, i, c, 8 ; ii, c : d, iii, c : v, a. III, A, iii. IV, c.]
12. ANDERSSON, J. G. Ueber die Stratigraphie und Tektonik der Bären Insel. Bull. Geol. Inst. Upsala, iv, part 2, pp. 243-280, ii pls. [III, B, iii, e.]
13. ANDREWS, C. W. et alii. On the marine fauna of Christmas Island (Indian Ocean). P. Zool. Soc. London, 1900, pp. 115-141, pls. xii, xiii. I. Introductory note by C. W. ANDREWS, pp. 115-117. (1 June.) [II, D, iii, c. III, A, iii.] *Echinodermata* determined by F. J. BELL, p. 116.
14. A[NDREWS], E. A. Merogeny. Amer. Natural. xxxiv, pp. 980-982. (Dec.) [II, F, viii.] A Review of Y. DELAGE (43) Zool. Rec. 1898, and (67) Zool. Rec. 1899.
- . See also CONANT (71), GEMMILL (125), HAMMAR (149), HERBST (156).
15. ANDRUSOV, N. J. Ueber *Ephippiellum symmetricum* Jar. Lomnicki. SB. Ges. Dorpat, xii, pp. 248, 249. (July.) [III, B, ii, d. IV, E.]
16. ANGELIS D'OSSAT, G. DE & MILLOSEVICH, F. Seconda spedizione Böttego (1895-97). Studio Geologico sul materiale raccolto da M. SACCHI, 8vo, x+212 pp., iv pls., i col. map, frontisp., text-figg. Società Geografica, Roma. [III, B, iii, c, I.] "Fossili dell' Harrar" is by ANGELIS D'OSSAT alone.
- . See also VERRI (339).
- ANTHULA, D. J. (18) Zool. Rec. 1899. Abstract by V. UHLIG, N. Jahrb. Min. 1901, i, pp. 470-474- (June 1901). Review by J. LAMBERT, Rev. paleozool. v, p. 41 (Jan. 1901).
17. APOSTOLIDÉS, N. C. L'Ophiure. In BOUTAN, L. and others. Zoologie descriptive &c., vol. i, pp. 300-326 (dated 1900, but publ. June, 1899). [II, B, i, e, I, 5-12 : c, iii : D, iii, e ; vi : F, ii. IV, A.] ARNAUD, H. (10) Zool. Rec. 1896. Abstract by A. TORNQUIST, N. Jahrb. Min. 1900, ii, p. 486- (Dec. 1900).
- ARTHABER, G. v. See FRECH (124).
- BARROIS, C. See LAMBERT (186).
18. BATAILLON, E. La segmentation parthénogénétique expérimentale chez les Amphibiens et les Poissons. C.R. Ac. Sci. cxxxi, pp. 115-118. (July.) [II, F, viii.] Abstract : by C. F., Rivista Biol. general. iii, p. 139 (Feb. 1901).
- BATHER, F. A. (11) Zool. Rec. 1893. See JAEKEL (167).—(25) Zool. Rec. 1897. Abstract : Feuille Natural. xxxi, p. 69 (1 Dec. 1900).—(26) Zool. Rec. 1899. Review by O. JAEKEL, N. Jahrb. Min. 1900, ii, p. 485- (Dec. 1900).
19. —. A treatise on Zoology edited by E. RAY LANKESTER. Part III, The Echinoderma by F. A. BATHER, assisted by J. W. GREGORY & E. S. GOODRICH. 8vo, viii+344 pp., 309 text-figg., London : Black. (March.) [II, A, ii, iii : B, i, a, 1-12 ; b, 1-12 ; c, 1-7 ; d, 1-3, 5, 6 ; e, 1, 3, 5-7 ; f, 1-3, 5-10 ; g, 1, 4-8, 11 ; h, 1, 5, 6 : E, iii, iv. IV, A-H.] Reviews : Athenaeum (5 May, 1900) ; Geol. Mag. (n. s.), dec. 4, vol. vii, pp. 233, 234 (May, 1900) ; Ann. Scott. Nat. Hist. 1900, p. 191 (July) ; Zoologist, iv, p. 242 (15 May, 1900) ; Amer. Natural. xxxiv, pp. 675, 676 (Aug. 1900) ; by R. F. S[CHARFF], Irish Natural. ix, pp. 118, 119 (May 1900) ; ~~W. W. D. PURRAY~~

- Nat. Hist. (7) vi, pp. 341-343 (Sept. 1900); by J. LAMBERT, Rev. paleozool. iv, pp. 130, 131 (July 1900) and pp. 171-173 (Oct. 1900); by E. A. M[INCHIN], Nature, lxii, pp. 545, 546 (4 Oct. 1900). Abstract: by H. LUDWIG, Zool. Centrbl. viii, pp. 387-390 (2 July, 1901).
20. [BATHER, F. A.] Studies in Edrioasteroidea. II. *Edrioaster buchianus* Forbes sp. Geol. Mag. (n. s.), dec. iv, vol. vii, pp. 193-204, pls. viii-x, 7 text-figg. (May.) [II, B, i, g, 5-8, 11.] Abstract: by C. V. C[ROOK], Geol. Centrbl. i, pp. 59, 60 (15 Jan. 1901).
21. —. The Lower Palaeozoic Crinoids of Bohemia. Ann. Nat. Hist. (7), vi, pp. 102-121, 7 text-figg. (July.) [II, B, i, f, 5. III, b, iv, a, 1v, r.] A review of WAAGEN & JAHN (246) Zool. Rec. 1899. Abstract: by J. LAMBERT, Rev. paleozool. iv, p. 175 (Oct. 1900).
22. —. Pores in the ventral sac of fistulate Crinoids. Amer. Geol. xxvi, pp. 307-312. (Nov.) [II, n, i, f, 5.] A reply to SPRINGER, F. (314). Abstract: by T. W. STANTON, Geol. Centrbl. i, p. 413 (1 July, 1901).
- . See also WELLER (348), ZITTEL (369).
23. BAUMBERGER, E. & MOULIN, H. La série néocomienne à Valangin. Bull. Soc. Neuchâtel, xxvi, pp. 150-210, 2 pls., 6 text-figg. (1898, received in London, March 1900.) [III, B, iii, b, 2.]
24. BEAUMONT, W. I. The fauna and flora of Valencia harbour on the west coast of Ireland. Part II. The Benthos. VII. Report on the results of dredging and Shore-collecting. P. Irish Ac. v, pp. 754-798, chart ii. (June.) [II, d, ii; iii, a, d. III, a, ii.] +BEDFORD, F. P. (29) Zool. Rec. 1899. Abstract by H. LUDWIG, Zool. Centrbl. vii, p. 436 (26 June, 1900).
25. —. On Echinoderms from Singapore and Malacca. P. Zool. Soc. London, 1900, pp. 271-299, pls. xxi-xxiv, text-figg. (1 Aug.) [II, B, i, c, 7, 8, 9; ii, b, c: d, iii, c; iv; vii; viii, d; ix: r, vii, c, III, a, i, iii. IV, c, d.] Prelim. Abstr.: Zool. Anz. xxxiii, p. 231 (23 April, 1900).
26. BEECHER, C. E. Conrad's Types of Syrian fossils. Amer. J. Sci. (4), ix, pp. 176-178. (March.) [II, E, i, c.]
27. —. On a large slab of *Uintacrinus* from Kansas. Amer. J. Sci. (4), ix, pp. 267, 268, pls. iii, iv. (April.) [II, E, i, c: r, vii, f. III, B, iii, b, 1.] —. See SMITH, G. O. (310).
28. BEEDE, J. W. Two new Crinoids from the Kansas Carboniferous. Kansas quart. (ser. A.), ix, pp. 21-24, and 25, 26 numbered as pl. v. (Jan.) [III, B, iv, d. IV, F.] Abstract: by J. LAMBERT, Rev. paleozool. v, p. 168 (July, 1901).
29. —. Carboniferous invertebrates. Being Part i of "Paleontology, Part II, Carboniferous and Cretaceous." Kansas Univ. geol. Surv. vi, pp. 1-189, pls. i-xxii, on pp. 189-232. [II, E, iv. III, B, iv, d. IV, c, F.] BELL, F. J. See ANDREWS, C. W. (13).
30. BENHAM, W. B. Zoological results of Trawling trials off the coast of Otago. Tr. N. Zealand Inst. xxxii, pp. 1-3. (June.) [III, A, iv.]

31. BENOIST, E. Note pour servir à l'étude de la géologie du Département de l'Indre. Étage Bathonien. Feuille Natural. xxxi, pp. 2-6, pl. i. (1 Nov.) [III, b, iii, c, 2, 3.]
32. BERGH, R. S. Vorlesungen über allgemeine embryologie. 8vo, x + 290 pp., 126 text-figg. Wiesbaden: Kreidel (1895). [II, f, i; iv; vi, a, 7, 10; viii.]
33. —. Das Schicksal isolierter Furchungszellen. Zool. Centrbl. vii, pp. 1-14. (9 Jan.) [II, f, viii.]
Summarises DRIESCH, Zool. Rec. 1891, (70) Zool. Rec. 1893, (52) Zool. Rec. 1898; FIEDLER, Zool. Rec. 1891; MORGAN (121) Zool. Rec. 1895; and ZOJA (358) Zool. Rec. 1897.
- . See also DRIESCH (96, 97), HERBST (156), KING, H. D. (and 171), LOEB (199, 201, 202), MORGAN (235), WINKLER (358).
34. BETTONI, A. Fossili domeriani della provincia di Brescia. Abh. Schweiz. pal. Ges. xxvii, Mem. 3, 88 pp., ix pls. (1900, received in London, 23 April, 1901.) [II, b, iii, d.]
- BEUSHAUSEN, L., see STUERTZ (325).
35. BIGOT, A. Feuille des Pieux. In 'Comptes rendus des Collaborateurs.' Bull. Carte geol. France, lxxiii, pp. 16-18. [III, b, iv, h.]
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- ZOJA, R. See BERGH, R. S. (33).
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II. BIOLOGY.

(A.) EVOLUTION.

- i. **General Principles** :—Influence of sessile habitat :—partially sessile *Crin.*, *Ast.*, & *Hol.* (p. 7), influence on locomotor organs *Crin.* & *Hol.* (p. 29), absence of eyes in *Crin.* not an effect (p. 34), complexity of nervous system in *Crin.* (p. 41), food-collecting organs in *Crin.* (p. 48), *Hol.* (p. 49), *Oph.* (p. 51), invagination of oral tentacles in *Hol.* (p. 76), position of mouth and anus, *Crin.* (p. 82) and *Hol.* (p. 83), passage from sessile to free-moving, *Antedon* (p. 153); LANG (190) : on development of *Antedon* (p. 801), and *Ast.* (pp. 875–878); HOUSSAY (163) : Pentamerism of *Echinoderma* a direct consequence ; CUNNINGHAM (76), p. 5.

- ii. **Relations of Echinoderma:**—to other *Coelomata*, esp. lower *Chordata*; BATHER (19) pp. 5, 8.
- iii. **Phylogenies of smaller groups:**—General interrelations of Classes of *Echinoderma*; BATHER (19) pp. 3–35, esp. 33, 35, also 39, 78, 95, 211, 217, and GREGORY, pp. 238, 325.—*Ast.* and *Oph.* derived from primitive *Ech.* which in turn was derived from *Hol.*, *Pelmatozoa* also derived from *Hol.*, the original source of all was a *Diplopula*; CUENOT (74) p. 457.—Evolution of *Pelmatozoa* in general (p. 39), of *Cystidea* in general (pp. 39–43), of Cystidean Orders, Families, and genera (pp. 43–77), of *Blastoidea* in general (pp. 78–81), of their Grades, Series, Families and Genera (pp. 79–91), of *Crinoidea* in general (pp. 95–97, 141–143), of their Orders, Families, and Genera (pp. 144–201), of *Edrioasteroidea* and of their Families and Genera (pp. 205–211), of *Holothurioidea* by GOODRICH (p. 235), of *Brisingidae* (p. 259), of *Echinoidea* in general (pp. 325–328), of their Orders and Families (pp. 300–324), the last three items by GREGORY; BATHER (19).

Phylogeny of early Mesozoic *Ech.* with tree, and geol. distrib. and resultant classification (pp. 48 et seqq.); origin of *Cidaridae*, views of A. Tornquist and R. T. Jackson compared, *Cidaroida* possibly derived from *Bothriocidaris* through *Ecidaris* and *Pernocidaris*; ancestor of *Atelostomata* related to *Galeropygus* “jamais cet être bizarre avec ambulacres à assules uniporifères”; “mais, si l'on veut arriver à des connaissances précises sur l'évolution des Echinides, il faut observer la nature, étudier dans tous leurs détails les espèces fossiles et absolument renoncer aux transcendantes inductions qui ne peuvent conduire à rien” (p. 42); LAMBERT (187).—Slight change in reef-habiting echinoids of Jurassic as compared with those of the more exposed marly limestone deposits; LAMBERT (186), p. 474.

Phylogenetic position of *Cicerocr.* (syn. *Lagarocr.*) :—a Pisocrinid (i.e. Triocrinid) that has developed arms something like *Ectenocr.*; SOLLAS (312) : “the climax of the *Heterocrinidae*”; BATHER in discussion of SOLLAS (312) : an advanced type of *Triocrinidae* that has reverted to *Heterocrinidae* in arm-structure; JAEKEL (168).

(B.) MORPHOLOGY.

i. Anatomy:—

a. ECHINODERMA.

- 1. General accounts:—Of living classes; PARKER & HASWELL (258) pp. 157–177; PERRIER (262) p. 244; SEGOVIA Y CORRALES (304).—General morphography, with special reference to features of phylogenetic and classificatory value; BATHER (19) pp. 3–35.—Fundamental morphology; HOUSSAY (163) pp. 53–56, figg. 20, 21.—Fundamental type; FLEISCHMANN (110), p. 72, fig. 26; HOUSSAY (163) p. 37, fig. 9.
- 2. Symmetries:—Origin of pentamerism (p. 11), the orientation of planes of bilateral symmetry (pp. 19–22); BATHER (19).—Radial symmetry, its relations to bilateral ancestor, and to larva; BUSQUET (53) p. 128.—Orientation and symmetry of external form; CUENOT (74) p. 438.—Suppressions of radiate symmetry, e.g. “the imperfect antimeres of [some] Holothurians, are spoken of as cases of ‘dysmerogenesis’”; LANKESTER (191) p. 8.
- 3. Homologies of Classes:—As regards organs generally (Chapter VIII passim); as regards apical plates or ‘calycinal system’ (p. 14, and by GREGORY, pp. 246, 268, 294, 325); BATHER

- (19); CUENOT (74) p. 438.—Supposed homologies of calycinal system independently due to radiate structure of the Echinoderm; HAMANN (148) p. 802.
4. Skeletal tissue or Stereom:—BATHER (19) pp. 28, 29.
 5. Skeletal Anatomy:—BATHER (19) p. 14.—Endoskeleton illustrated by preparations of *Antedon rosacea*, *Solaster papposus*, *Ophiocoma erinaceus*, *Echinometra lucunter*, *Clypeaster humilis*, *C. rotundus*, *Holothuria nigra*; STEWART (318) pp. 12–14.
 6. Hydrocoel and associated cavities:—BATHER (19) pp. 7–11.
 7. Coelom and other Body-cavities, and their Contents:—BATHER (19) pp. 22, 25.—Coelom, its relations to the archenteron; LANKESTER (191) p. 16.—Lacunar system and sinus; CUENOT (74) p. 450.—Haemal system of *Echinoderma* “one and the same morphological entity” with blood-vascular system of other Coelomocoela [=Coelomata], i.e. not derived from the coelom; LANKESTER (191) p. 11.
 8. Digestive System, Cuvierian organs:—Vacant.
 9. Nervous Systems and sense-organs:—BATHER (19) pp. 30–32.—Of the classes compared; CUENOT (74) p. 440.—Sense-organs of *Hol.*, *Crin.*, *Oph.*, *Ech.*, esp. spheridia, with figures after Hamann and Loven, general account; DALMADY (78) pp. 52–54.
 10. Mesodermal tissues (exc. skeletal): BATHER (19) p. 27.
 11. Axial organ or Ovoid gland:—BATHER (19) p. 23; CUÉNOT (74) p. 450.
 12. Genital system:—BATHER (19) p. 24.—Development and homologies of, in the classes; CUÉNOT (74) p. 453.
- b. *HOLOTHURIOIDEA*.
1. General Anatomy:—General morphology and relations (pp. 17–19), also description of a typical example and of variations therefrom, by GOODRICH (pp. 220–226); BATHER (19).—Morphology; HOUSSET (163) pp. 138–141, figg. 92–94.—General account, with figures of *Psolus*, *Hypsilethuria*, *Rhopalodina*, &c.; PERRIER (262) p. 271.
 2. Symmetries:—(p. 20) and by GOODRICH (p. 236); BATHER (19).
 3. Homologies:—with *Pelmatozoa* (pp. 18, 19), as regards gonads (p. 24), also, as regards oesophageal skeleton, by GOODRICH (p. 224); BATHER (19).
 4. Stereom:—Spicules (p. 29), and by GOODRICH (pp. 220, 223); BATHER (19).
 5. Skeletal Anatomy:—Calcareous ring; GOODRICH in BATHER (19) pp. 220, 224; STEWART (318).
 6. Hydrocoel &c:—Watervascular system (p. 18), and by GOODRICH (pp. 221, 224); BATHER (19).
 7. Coelom and other Body-cavities:—GOODRICH in BATHER (19) pp. 221, 223.
 8. Digestive System:—Alimentary canal, Cuvierian organs, and respiratory trees; BATHER (19) pp. 18, 27, and by GOODRICH, p. 221.
 9. Nervous System:—by GOODRICH (p. 221); otocysts (p. 32); BATHER (19).
 10. Mesodermal tissues (exc. skeletal):—GOODRICH in BATHER (19) pp. 220, 223, 224.—Muscles of *Holothuria tubulosa*, dissection, and description thereof; STEWART (318) p. 90.

11. Axial organ :—its homologue ; BATHER (19) p. 24.
 12. Genital System :—(p. 24), & by GOODRICH, pp. 223, 225 ;
 BATHER (19).

c. *ECHINOIDEA.*

1. General Accounts :—General morphology and relations (pp. 15–17); also description of *Echinus esculentus* as typical *Ech.* and of variations therefrom by GREGORY (pp. 285–299) : BATHER (19).—External and internal anatomy of *E. esculentus* as typical *Ech.* ; CHADWICK (59) : ditto, with good figures ; CUÉNOT (75).—Morphology of *Ech.* with diagrams of integument, aboral pole, displacement of symmetry, jaw-apparatus, digestive tube, blood and water-vascular systems ; HOUSSAY (163) pp. 121–130.—General account, with diagrams, general anat. and jaws ; PERRIER (262) p. 262.
2. Symmetries :—BATHER (19) p. 21 : HOUSSAY (163) pp. 123, 124.—Orientation and terminology of rays &c. in *Echinus* ; CUÉNOT (75) p. 269.—Asymmetry of *Scutella excentrica* related to its habit of burrowing and its vertical position in sand ; HARRINGTON (152).
3. Homologies with other Classes :—Generally (p. 33), as regards apical system (p. 14) and by GREGORY (pp. 294, 325) ; BATHER (19).
4. Stereom :—BATHER (19) (see II, B, i, a, 4).—Histology of spines, with special reference to fossils, classed according to the type of structure in *Cidaris*, *Echinus*, *Diadema*, *Clypeaster*, *Scutellidae*, *Spatangus*, descriptions of numerous spp. ; HESSE (189).
5. Skeletal Anatomy :—Full general account ; GREGORY in BATHER (19) pp. 285–289 & 293–298.—General description of skeleton of *Echinus esculentus* ; CUÉNOT (75) p. 266, figg. 108–110, 112–115 : CHADWICK (59) pp. 1–10, pls. i, ii.
 Apical System :—of *Conocypris delanouei* ; FOURTAU (117) p. 53, fig. 1.—‘Dicyclic apex’ new term, when genitals and oculars form double ring around periproct ; ‘monocyclic,’ when they form a single ring [not to be confused with the same terms as long since applied to the apical system of Echinoderms in a totally different sense] (p. 12, footnote) ; also ‘hemiolycycle’, when some oculars are between the genitals, so as to form a ring and a half, derived from Ημιλος [*sic*], and Κυκλος [should be ‘hemiolycyclic’ from ημιλοις] (p. 22, footnote) ; rudimentary suranal in young of *Palaeopedina globulus*, hitherto unknown among *Pedininae*, also tendency towards exocyclic anus (p. 25, & figg.) : LAMBERT (187).
 Coalescence of primary ambulacrals, its cause and progress, studied in *Diademopsis* ; LAMBERT (187) p. 8, text-figg.
 Evolution of glyphostomate peristome ; LAMBERT (187) p. 37.
 Inconstancy of crenulations of spine-tubercles, value for classification ; LAMBERT (187) p. 50.
6. Hydrocoel and associated cavities :—in general ; GREGORY in BATHER (19) pp. 290, 291.—Of *Echinus* ; CHADWICK (59) pp. 13–16, pls. iii, iv : CUÉNOT (75) p. 285, figg. 117, 122, 123.
7. Coelom and other Body-cavities, and their Contents :—GREGORY in BATHER (19) p. 292.—*Echinus esculentus*—coelomic cavities (p. 284, figg. 116, 118, 127), lacunar system, Polian vesicles ‘vesicules spongieuses’ (p. 290, fig. 126) ; CUÉNOT (75) : epineural canals (p. 18), pseudohaemal system and radial

- pseudohaemal canals (p. 19), haemal system, existence of radial haemal canals denied (pp. 19, 20), coelom generally (p. 20), corpuscles in fluid (p. 21); CHADWICK (59), pls. iii, iv.—Radial vessels separated from test by a mesentery in *Asthenosoma heteractis*; BEDFORD (25) p. 279.—Corpuscles of coelomic liquor of *Echinus*; CUÉNOT (75), p. 282, fig. 121.
8. Digestive System:—*Echinus esculentus*; CHADWICK (59) pp. 9-13, pls. iii-v; CUÉNOT (75) p. 278, fig. 119.—Balloon-shaped anal tube of *Diadema setosum* and *Echinothrix calamaria*; ANDERSON (11) p. 13.—2 additional loops of gut round top of jaw-apparatus in *Asthenosoma heteractis*; BEDFORD (25) p. 279.
 9. Nervous System:—Of *Echinus*; CHADWICK (59) p. 17, pls. iii, iv; CUÉNOT (75) p. 275, figg. 116-118.—Deeper ganglionated nerve-layer in radius of *Asthenosoma heteractis*; BEDFORD (25) p. 280 and text-fig.—Sphaeridia of *Echinus*; CHADWICK (59) p. 9, pl. ii.
 10. Mesodermal Tissues (exc. skeletal):—Muscles,—lantern of *Echinus esculentus*, section of *Asthenosoma hystric*: description of the preparations (pp. 89, 90); Joints,—that allow of continuous growth, illustrated by test of *Echinus acutus* (p. 53); that allow of voluntary motion, illustrated by spine-attachment of *Heterocentrotus mammillatus* and *Phyllocaanthus imperialis* (p. 56); STEWART (318).
 11. Axial Organ:—Of *Echinus*; CHADWICK (59) p. 20, pls. iii, iv: histology; CUÉNOT (75) p. 288, figg. 124, 125.
 12. Generative System:—Of *Echinus*; CHADWICK (59) p. 21; CUÉNOT (75) p. 294, figg. 127, 128.
- d. ASTEROIDEA.
1. General Accounts:—with diagrams of general anatomy & ambulacrual system; PERRIER (262) p. 252.—General morphology and relations (p. 13), and description of a typical example and of variations therefrom, by GREGORY (pp. 241-248); BATHER (19).—Morphology, with diagrams of general anatomy, and ambulacrual grooves; HOUSSAY (163) pp. 130-132.
 2. Symmetries:—BATHER (19) pp. 19-22.—Experiments on regeneration of *Asterias* held to prove that "position of the madreporite is a variable one and does not depend on some polarity in the disc"; KING (171) p. 732.—Symmetrical addition of rays in *Pycnopodia*, the plane of symmetry compared with that of the larva; RITTER & CROCKER (283).—(See also II, F, vii, d, 2.)
 3. Homology:—With *Oph.*; GREGORY in BATHER (19) pp. 238, 259.
 4. Vacant.
 5. Skeleton:—General account; GREGORY in BATHER (19) pp. 241, 246, 249.
 6. Hydrocoel and associated cavities:—GREGORY in BATHER (19) pp. 243, 247 [describes 5 Polian vesicles in *Asterias rubens*, though they are said to be absent from the genus].
 - 7-12. Vacant.
- e. OPHIUROIDEA.
1. General Accounts:—PERRIER (262) p. 260.—Description of a typical example and of variations therefrom; GREGORY in BATHER (19) pp. 262-273.—*Ophiothrix fragilis* descr. as typical *Oph.*; APOSTOLIDÉS (17).—Morphology; HOUSSAY (163) p. 132.

2. Vacant.
3. Homology :—With *Ast.*; GREGORY in BATHER (19) pp. 238, 262: ditto, as regards arm-skeleton; HAMANN (148) p. 794.
4. Vacant.
5. Skeletal system :—Full account; HAMANN (148) pp. 786–803.—General account; GREGORY in BATHER (19) pp. 262–264, 268–272.—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 303.—Terminology of elements of test; VERRILL (341) p. 302.
Alleged apical or calycinal system in *Oph.* shown to be a relatively recent development and not in ancient *Oph.* (*Ophiocrinasteriae*), fossil or recent *Ophiomyidae* (*Streptophiuriae*), or *Euryalidae* (*Cladophiuriae*); STUERTZ (325) p. 181 et seqq.
- Oral armature, peristomial plates said to be “between the mouth-frames and the buccal shields”; GREGORY in BATHER (19) p. 264; but MINCHIN in Review points out that it is the mouth-frames that are between the peristomial plates and the buccal shields.
- Articular surfaces of arm-vertebrae considered as basis of classification, criticism of Bell and Gregory, impossibility of applying it to many fossil *Oph.*, detailed discussion of *Protaster*, *Bundenbachia*, and *Palastropecten*; STUERTZ (325) p. 177 et seqq.
- Position of Madreporite in palaeozoic *Oph.*; STUERTZ (325) p. 192.
6. Hydrocoel &c. Respiratory organs :—GREGORY in BATHER (19) pp. 265, 272.—Water-vascular system, full account; HAMANN (148) pp. 819–826: of *Ophiothrix fragilis*, anat. and histol.; APOSTOLIDÉS (17) p. 308, figg. 132–139.—Respiratory organs, bursae; HAMANN (148) p. 828.
7. Coelom and other Body-cavities :—GREGORY in BATHER (19) p. 266.—Blood lacunar system, full account (pp. 836–844), pseudohaemal spaces, epineural canals, axial sinus and its branches (p. 844), coelom of disc and arms (p. 847), their contents (p. 848); HAMANN (148).—Vascular system of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 315, fig. 137.
8. Digestive System :—Of *Ophiothrix fragilis*, anatomy and histology; APOSTOLIDÉS (17) p. 305 et seqq., fig. 131.—Gut, peristomal spaces, and mesenteries; HAMANN (148) p. 826.
9. Nervous System :—Full account (pp. 806–819), innervation of spines (p. 786) and hooks (p. 789), epidermis (p. 783); HAMANN (148).—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 318, fig. 140.
10. Mesodermal tissues :—Integument (p. 785), muscles of body-wall (pp. 803–806); HAMANN (148).—Muscular tissue of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 305.
11. Axial Organ or Ovoid Gland :—HAMANN (148) pp. 841–844.—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 316, figg. 138, 139.
12. Generative Organs :—Full anatomical and histological account of; HAMANN (148) pp. 830–836.—Of *Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 320, figg. 141, 142.

f. CRINOIDEA.

1. General :—General morphology and relations (pp. 9–12, 94–97), description of a normal crinoid of simple structure (pp. 97–110) and of the chief modifications of structure (pp. 110–137); BATHER (19).—Morphology with diagrams of general structure, arms, and chambered organ; HOUESSAY (163) pp. 132–138.—General account with generalised section of *Antedon*; PHAM

- (262) p. 246.—Description of external and internal anatomy of *Antedon bifida* as typical *Crin.* with good figures; CUÉNOT (75).—General recapitulation of anat. of *Antedon*; BOSSHARD (44) pp. 65–71.—General account of structure, with special reference to Silurian forms; WELLER (348) pp. 23–37.
2. Symmetries:—General orientation (p. 110), symmetry of base (p. 123); BATHER (19).—Orientation and terminology of rays &c. in *Antedon*; CUÉNOT (75) p. 230.
 3. Homologies:—Relations of *Crin.* to *Cyst.* and *Blast.*; BATHER (19) pp. 95–97.—Radials=terminals; CUÉNOT (75) p. 232.
 4. Vacant.
 5. Skeleton:—Account of simple type (p. 99 et sqq.) and of its chief modifications (p. 111 et sqq.); BATHER (19).—General account, *Antedon*, and special of arms and cirri; BOSSHARD (44) pp. 73–84.—General, *Antedon*; CUÉNOT (75) p. 232, figg. 87–90.—Criticism of terminology used by WAAGEN & JAHN; BATHER (21) p. 104.
- Dorsal cup, dicyclic and monocyclic base, compound radials, supplementary plates; BATHER (19) pp. 99, 111, 117 et sqq.
- Tegmen, and homologies of orals; BATHER (19) pp. 100, 124 et sqq.—Tegmen of *Seyhoor.*; BATHER (21) p. 119.—Tegmen of *Uintacr. socialis* partly calcified, central anus, marginal mouth to which peripheral food-grooves lead from arm-rami, as in *Actinometra*; SPRINGER (315).
- Anal plates; BATHER (19) p. 119.—Anal tube, pores between plates of: doubted; BATHER (19) p. 130: described and figd. for *Decadoocr. tumidulus*, *Auloocr. agassizi*, *Scyphocr. validus*, *S. van hornei*, *Scaphioocr. unicus*, *S. arboreus*, *S. swallowi*, *Decadoocr. grandis*, *Parisocr. subramosus*, and similarly placed slits in *Scaphioocr. missouriensis* and *Scyphocr. hoveyi*; SPRINGER (314): the statements accepted by BATHER (22), who, however, still criticises the attitude and figures of WACHSMUTH & SPRINGER's Monograph (336) Zool. Rec. 1897.
- Brachia,—modifications, terminology of brachials; BATHER (19) pp. 100, 112 et sqq.—Arm-branching in *Heterocrinidae* and *Triacrinidae* (= *Pisocrinidae*) compared, with reference to *Lagocr.* (= *Cicerocr.*); JAEKEL (168): the same contrasted; BATHER in discussion on SOLLAS (312).—Fixed brachials and pinnulars of *Scyphocr.*; BATHER (21) p. 117, fig. 7.
- Stem,—its origin, structure, and modifications, the law of Wachsmuth & Springer revised; BATHER (19) pp. 105, 132 et sqq.—Stem of *Scyphocr.*; BATHER (21) p. 119.—Origin of centrodorsal of *Antedon* traced to 3, 5, and 6 infrabasals, respectively, in Paleozoic *Crin.*; SARDESON (294).—“*Calpiocr. lobemicus*” considered as a root; BATHER (21) p. 112, fig. 6.
6. Hydrocoel &c.—Water-vascular system and its pores, generally; BATHER (19) pp. 102, 130: in *Antedon*; CUÉNOT (75) p. 250, figg. 99–102, 104, 105.
 7. Coelom and body-cavities; contents:—coelomic and haemal spaces, axial canal; BATHER (19) pp. 103, 133.—Coelom of theca and arms of *Antedon*; CUÉNOT (75) p. 244, figg. 95, 96, 103.—Lacunar or haemal system,—spongy organ (p. 254, figg. 95, 101, 102); CUÉNOT (75).—The radial blood-vessels and their circum-oesophageal ring referred to the pseudohaemal (=perihemal) system; BATHER (19) p. 102; but MINCHIN in Review claims that they belong to the lacunar or haemal system, since the pseudohaemal system of *det.* is coelomic in origin, and probably represented in *Crin.* by the subtentacular canals.

- Globules, amoebocytes, &c. of *Antedon*; CUÉNOT (75) p. 243, fig. 93.
8. Digestive System :—BATHER (19) pp. 102, 136.—Of *Antedon bifida*, two ramifying caeca; CUÉNOT (75) p. 241, fig. 94.
 9. Nervous System :—BATHER (19) pp. 103–106.—Of *Antedon* (p. 238, fig. 92), chambered organ (p. 247, fig. 97); CUÉNOT (75).—Axial ridges inside cup-plates of *Cyathocr. cora*; WELLER (348) p. 63.
Sense-organs of *Antedon*, tactile papillae, histology; CUÉNOT (75) p. 240, fig. 93.
 10. Mesodermal tissues, &c. :—Modes of union between skeletal elements; BATHER (19) pp. 108, 116, 117.—Exhaustive enquiry into muscles, ligaments, and connective tissue of arms and cirri of *Antedon*; BOSSHARD (44) pp. 84–102.—Muscles of *Antedon*, distinguished as ‘hyaline’ and ‘refrangent’; CUÉNOT (75) p. 236, fig. 91.
Sacculi; BATHER (19) p. 137: of *Antedon*; CUÉNOT (75) p. 237.
 11. Axial Organ :—*Antedon*, histology, said to be “sans homologue chez les autres Echinodermes”; CUÉNOT (75) p. 249, fig. 98.
 12. Generative System :—CUÉNOT (75) p. 255, figg. 103–105.—*Crin.* like *Hol.* are Monorchonia, the rudiments of the gonads unconnected with the axial organ, and in postr. interradius, as in *Cyst.*; RUSSO (292).
- g. *CYSTIDEA.*
1. General morphology, relations, and lines of evolution of *Cystidea* (pp. 39–44), of *Edrioasteroidea* (pp. 205–211); BATHER (19).
 - 2–3. Vacant.
 4. Stereom :—Structure of test in *Cystidea* (p. 41, fig. i) in *Aristocystis* and *Calix* (p. 44, figg. iii, v); BATHER (19).
 5. Skeleton :—Complete description of *Edrioaster buchianus*; BATHER (20).—‘Hydrophores palmées’ are epithecal food-grooves; BATHER (19) pp. 44, 46.
 6. Hydrocoel &c. Respiratory organs :—Reconstruction of ambulacral structures in *Edrioaster* (p. 197, text-fig. 4), madreporite and water-ring (p. 198, text-fig. 6, pl. x); BATHER (20).—Extensions of hydrocoel in *Diploporella*; BATHER (19) p. 71.
Diplopores (pp. 41, 71), peculiar distribution of pectini-rhombs in *Glyptocystididae* explained (p. 58, fig. xx); BATHER (19).
 7. Dorsal mesentery in *Edrioaster*; BATHER (20) p. 199, text-fig. 6.
 8. Course of gut in *Edrioaster*; BATHER (20) p. 199: in *Glyptocystididae*; BATHER (19) p. 58.
 - 9–10. Vacant.
 11. Chambered organ, *Edrioaster*; BATHER (20) p. 202, pla. viii–x.
- h. *BLASTOIDEA.*
1. General morphology and evolution of structures, including *Protoblastoidea*; BATHER (19) pp. 78–91.
 - 2–4. Vacant.
 5. Skeleton :—Description and elucidation of the main points of skeletal structure in all genera; BATHER (19) pp. 80 et seqq.—Anal tube in *Schizoblastus sayi* (p. 247), probably in *Codonites? inopinatus* and *Granatocr. aplatus*, anus and posterior spiracles not confluent in *G. aplatus*, extra anal plate in a *Pentremites elongatus* (p. 248); ROWLEY (291).

6. Respiratory organs :—Hydrospires, origin and gradual elaboration; BATHER (19) pp. 83 et seqq.
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ii. Variation :—

- a. In form :—Large size of Echinoderms in Arctic regions; SCHAUDINN (296) p. 236.—In measurements of *Schizaster philippii* (p. 15), *Echinus magellanicus* (p. 10) and other spp.; MEISSNER (229).—Variations of *Ananchetes sulcata* connected with locality [or horizon]; GRÖNWALL (143) p. 68.—Due to environment, *Anorthopygus michelini* is elevated and found in limestone, *A. orbicularis* is flattened and found in marl; CHOIFFAT (61) also (62) p. 199.—Dwarf fauna including *Hemaster* spp.; CHOIFFAT (62) p. 44.
 - b. In form and surface characters :—Study of variations in *Conoclypeus delanouei*, esp. form, periproct (fig. 2), measurements; FOURTAU (117) p. 51.—In ornament of apex of *Asterocidaris granulosa*, showing importance attached to this in *Tiarinæ* to have been exaggerated; LAMBERT (186) p. 485.—In gonopores and sutures in *Laganum decagonale* (p. 284), in lunules, pore-fields, &c. of *Echinodiscus laevis* (p. 285), in superomarginals and in position of anus in *Archaster typicus* (p. 289); BEDFORD (25).—In *Asterias lincki* (pp. 201, 202), in spines of *A. groenlandica* (pls. v, ix), in *Solaster papposus*, partly as local races (p. 207, pl. vi), in *S. endeca* (p. 210), in *Ctenodiscus crispatus* (p. 223), in *Gorgonocephalus eucnemis* (p. 227); DOEDERLEIN (93).—In shape of oral shields and in dorsal plating of *Ophiozona nivea*; VERRILL (341) p. 302.—General account of variations observed in *Agaricocr.*; KLEM (173).—In *Cryptoblastus melo* (p. 246), *Schizoblastus sayi* (p. 247), *Orbitremites norwoodi* (p. 247); ROWLEY (291).
 - c. In colour :—Colours and pigments of *Ast.*, *Oph.*, *Ech.*, *Crin.*, *Hol.*, their variations, contrast of deep and shallow water forms, comparison with *Crustacea*; NEWBIGIN (241) pp. 129-137.—Variation in colour of *Diadema saxyatile* (p. 277), differences in colour between Singapore and Malacca specimens of *Temnopleurus torenumaticus* (p. 280); BEDFORD (25).
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 - d. Meristic variation :—
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fusion of two rays ; DAVENPORT (80) p. 196, fig. 180.—Discussion of hyperactiny and heteractiny in *Oph.*, not noticed in the northern collections under examination ; GRIEG (139) p. 272.—5 and 6-rayed *Ophiostigma isacanthum* and *Ophiocoma pumila* ; VERRILL (342) p. 583.—Stem-fragment of *Balanocr. subteres* with six petals on joint surface, but four cirri at node ; LISSAJOUS (195) p. 22.

2. Reduplication or absence of parts :—Variation of numbers of anal plates in *Arbacia dufresnei* ; MEISSNER (229) p. 6.—Variations in topotypes of *Hemicidaris lucensis*, esp. in composition of major ambulacrals, due to accidental coalescence of plates, also seen in *H. grimaultensis* ; LAMBERT (186) p. 477.—Multiple madreporites in *Asterias* ; WAITE (345).—Forked arm in *Pteraster militaris* ; LUDWIG (210) p. 470.—Variation in number of rami to the arm in *Agaricocr.* ; KLEM (173) p. 172.
- e. Abnormalities :—*Phyllophorus pellucidus* and *P. drummondi* with 15 tentacles of which each third one is smaller ; LUDWIG (209) pp. 154, 155.—Variations in mouth-parts of *Ophiacantha bidentata* perhaps due to repair of damages ; VERRILL (341) p. 322.—Abnormal anal area of cup in *Cyathocr. vanhornei* (p. 64), in *Thysanocr. pentangularis* (p. 72), separation of RR by iBr in some specimens of *Siphonocr. nobilis*, as in *Rhodocrinidae* (p. 88) ; WELLER (348).—Slight reduction of left postr. basal, with shifting of suture, in *Pisocr. (= Triacr.) pilula* ; SOLLAS (312) p. 268, text-fig. 4 : JAEKEL (168) p. 483, fig. 5.—Extra anal in *Pentremites* ; ROWLEY (291) p. 248.

iii. Secondary Sexual Characters :—

- a. Differences of Form or Structure :—Vacant.
- b. Differences of Colour :—Vacant. (See under II, B, ii, c.)
- c. Protection of Young :—In *Hol.* brood-pouch due to direct stimulus of eggs ; CUNNINGHAM (76) p. 309.—Viviparity and care of brood in *Cucumaria glacialis* alone among Arctic *Hol.*, contrast with Antarctic ; LUDWIG (209) pp. 144, 172.—List of Arctic *Ast.* with care of brood ; LUDWIG (210) p. 495.

(C.) PHYSIOLOGY.

- i. General :—Vacant.
- ii. Circulation :—Introduction of fluid into the ambulacral system ; CUÉNOT (74) p. 454.
- iii. Respiration :—Osmosis between internal fluid and external medium maintaining almost an equilibrium of density, in *Asterias rubens* and other marine invertebrates ; QUINTON (275).—Respiration of *Ophiothrix fragilis* by bursae and stone-canal ; APOSTOLIDÉS (17) p. 317.
- iv. Alimentation and Digestion :—Vacant. (See II, B, iv.)
- v. Excretion and its Products :—Renal function of various organs in Echinoderms, summary of previous knowledge, conclusions of BORDAS as to respiratory trees of *Hol.* confirmed, and the function now first ascribed to genital organs of *Hol.* ; RUSSO (293).—Excretion and phagocytosis ; CUÉNOT (74) p. 455.—Excretion in *Echinus*, by endothelium of second curve of intestine, by ovoid gland, peritoneal cells, and amoebocytes (p. 293), in *Antedon*, crystalline corpuscles in mesenteries are perhaps products of excretion (p. 243) ; CUÉNOT (75).—Pigments (see also II, B, ii, c) ; NEWBIGGIN (241).—Pentacrinin and Antedonin, account abstracted from Moseley, 1877 ; LIVANSIDES (196).

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vi. **Sensation**:—Reflex of Echinoid to light and shadow; UEXKUELL (333).—Asymmetry of some *Crin.* and *Blast.* suggested as due to heliotropism; KLEM (173) p. 179.—Pain not felt by *Asterias* or *Ophiura*, proved by experiment; NORMAN (247) p. 278.

vii. **Miscellanea and Experimental Physiology**:—Movements of *Antedon* arms and cirri, action of muscles and ligaments; BOSSHARD (44) pp. 103–105.—Coordination of locomotor movements after amputation of arms or cutting of nerve-ring in *Ophiura*; GRAVE (135) p. 87.

No reaction to galvanic current by the most sensitive and moveable parts of adult *Asteracanthion*, *Echinaster*, *Ophioderma*, and *Antedon*; NAGEL (239) p. 337.—Effect of constant electrical current on larvae of *Strongylocentrotus*, *Sphaerechinus*, *Ophiothrix*, and *Asteracanthion*; CARLGREN (56) pp. 470–478.

Effect on ciliary motion in *Ech.* larvae of solutions of NaCl, NaCl+KCl, and MgCl₂+CaCl₂; LOEB (197) p. 335 [see also under II, F, viii].

(D.) BIONOMICS.

i. **General Accounts**:—General account of *Echinodermata*; ACLOQUE (2).—General bionomics of *Echinodermata*, esp. *Asterias vulgaris*; DAVENPORT (80) pp. 192–204.

ii. **Special habits**:—Boring of *Strongylocentrotus lividus* not always put into practice; BEAUMONT (24) p. 756.—For boring, see also ANDERSON & ANDREWS, sub iii.

Phosphorescence in *Ophiacantha*; VERRILL (341) p. 321.

iii. **Habitat**:—(a) Of *Hol.*, *Ech.*, *Ast.*, *Oph.*, and *Crin.* in Valencia Harbour; BEAUMONT (24) pp. 796, 797.—Ditto in Port Erin Bay; HERDMAN (157) pp. 49, 50, pls. ii, iii.—Of *Synapta*, *Ophioctenida*, *Ophiothrix*, and *Echinocardium* in Salcombe estuary; ALLEN & TODD (7) p. 187.—(b) *Holothurioidea*,—Arctic and Sub-Arctic (passim, sub species, and p. 171); LUDWIG (209).—*Synapta viridis* among filamentous green algae; VERRILL (342) p. 587.—(c) *Echinoidae*,—influence of habitat on distribution of species, with special reference to spp. quoted sub III, A, iii; BEDFORD (25) p. 272.—Of *Echinus esculentus*; CUÉNOT (75) p. 266.—Vertical position in sand of *Scutella excentrica* related to its asymmetry; HARRINGTON (152).—Boring in coral conglomerate at low-water mark, *Echinostrephus*; ANDERSON (11) p. 14.—*Echinometra lucunter* bores in rock at Christmas Id.; ANDREWS (13) p. 117.—(d) *Astroidea*,—various spp., see list in III, A, iii; BEDFORD (25).—Of Arctic spp.; LUDWIG (210) passim, esp. pp. 488, 495.—(e) *Ophiuroidea*,—Arctic, discussed under spp., also discussion of epizootic habitats (p. 272); GRIEG (139).—*Ophiura brevispinna* at North Falmouth, Mass.; GRAVE (135) p. 84.—*Ophiothrix fragilis*; APOSTOLIDÉS (17) p. 300.—*Ophiothrix angulata* often gregarious among sponges (p. 585), *Ophiactis krebsi*, in sponges and corals, gregarious while young (p. 586); VERRILL (342).—*Ophiothrichidae* (p. 305), *Amphiura* (p. 308), *Ophiacantha* (p. 321), *Ophiochondrus* adapted for clinging to gorgonians (p. 357); VERRILL (341).—(f) *Urinoidea*,—*Antedon bifida*; CUÉNOT (75) p. 228.

- iv. **Feeding** :—Amount of food correlated with rate of growth in *Asterias*; MEAD (228).—Lamellibranchs and a holothurian, *Hoplodactyla*, eaten by *Luidia penangensis*; BEDFORD (25) p. 293.—*Ophiura brevispina* a nocturnal scavenger; GRAVE (135) p. 85.—Young in brood-chamber of *Pteraster obscurus* nourished by slime secreted from modified papulae; DOEDERLEIN (93) p. 215.
- v. **Defence and Protection** :—
- a. Active :—Irritation resulting from prick by spines of *Diadema* due to epidermal membrane; ANDERSON (11) p. 14.
 - b. Concealment :—Vacant.
 - c. Protective Coloration :—Green *Synapta viridis* in green algae; VERRILL (342) p. 587.—Olive-green of *Ophiura brevispina* in seaweed; GRAVE (135) p. 85.—*Hemicuryale pustulata*, *Sigebia murrhina*, and *Ophioplus tuberculatus* ornamented and coloured to imitate *Gorgonella* to which they cling (pp. 364, 365), colour of *Amphiura* protective, *A. otteri* salmon or light orange protective in deep water (p. 308); VERRILL (341).
 - d. Other protective Adaptations :—(?) variations in spines of spp. of *Ophiacantha*; VERRILL (341) p. 321.
- vi. **Locomotion** :—Action of spicules in locomotion of apodus *Hol.*, synopsis of opinions, SLUITER in discussion says that in many *Synaptidae* spicules lie too deep in skin to be effective, and their action would also be hindered by the secretion of slime; HORST (162).—Burrowing of *Scutella excentricus* related to its asymmetry; HARRINGTON (152).—Burrowing of *Ophiochnida brachiata*; ALLEN & TODD (7) p. 187.—*Ophiothrix fragilis*, “il n’emploie ses pattes ventouses que d’une manière passagère”; APOSTOLIDÉS (17) p. 301 [les Ophiurides n’ont pas des pattes ventouses].—*Ophiura brevispina* by arms, spines, and, the spines being short, also by the podia which form fixed points; GRAVE (135) p. 85.
- vii. **Autotomy and Regeneration** :—In *Asterias vulgaris*, in state of nature: 10·76% found regenerating arms; injured arm as a rule thrown off from disc and wholly replaced; experiments on regenerative power of single arms, of portions of disc, of madreporite, of tips of arms; KING (171).—In *Linckia* “regeneration takes place, without any part of the disc being preserved, from a bare arm-fragment” proved (?) by a series of specimens, not by experiment; HUBRECHT (165) p. 328.—Autotomy, constant occurrence in *Asterias tenuispina* and *Echinaster fallax*, exhibition of a *Linckia* in which regeneration seemed to have taken place in an arm devoid of any part of disc, but this doubtful; HORST (161).—Loss of ray followed by regeneration in *Asterias* does not affect normal growth-curve; MEAD (228).—Two regenerating rays in young *Asterias*; DOEDERLEIN (93) pl. ix.—Incipient autotomy of ray in *Archaster typicus*; BEDFORD (25) p. 289. Regeneration in *Oph.*; DAVIDOV (81).—In *Ophiacantha* produces apparent variations; VERRILL (341) p. 322.—*Ophiactis krebsi*, 6 or 7 arms in young, multiplied by fission; VERRILL (342) p. 586.—In *Antedon*; CUÉNOT (75) p. 261.—Bulb of anal tube in type of *Batocr. insuetus* possibly due to regeneration; KLEM (173) p. 179.
- viii. **Parasites and Commensals** :—(a) The following Copepods parasitic on Echinoderms near Naples, *Asterocheres lilljeborgi* on *Echinaster sanguinolentus*, *A. echincola* on *Echinus esculentus*, *A. violaceus* on *E. microtuberculatus*, *Ophioglypha* (?), and *Ophiothrix* (?), also with *A. minutus* on *Strongylocentrotus lividus* and *Sphaerechinus granularis*, *Collochères gracilicauda* on *Antedon mediterranea* [?—*bifida*], *Scotomyzon gibberum* on *Asterias rubens*, *Parartotrogus richardi* on

? *Ophioglypha lacertosa*, *Cancerilla tubulata* on *Amphiura squamata*, ? *Ophiocoma nigra*, & ? *Ophiothrix fragilis*; also a Lichomolgid on *Sphaerechinus granularis*; GIESBRECHT (129) p. 199.—(b) Copepoda—*Dactylopus*, *Esola*, *Rhapidophorus*, *Diogenidium*, and *Abacola*,—also *Leuckartella*, in body-cavity of *Mulleria agassizi*; EDWARDS (103).—Parasites of *Hol.*; ZACHARIAS (363).—Gastropod in gut of *Stichopus tremulus*; BONNEVIE (42).—*Entoconcha* in *Holothuria* sp.; HARRINGTON (152).—(c) Of *Echinus esculentus*, complete list, incl. flagellate *Oikomonas echinorum*; CUÉNOT (75) p. 297, fig. 121.—Mollusc, *Montacuta ferruginosa* commensal with *Echinocardium cordatum*; ALLEN & TODD (7) p. 188.—*Pionodermes phormosoma* and its galls; RICHARD (282) pp. 80, 82, figg. 30, 32.—Spines of *Ech.* [Cidarid] bored by some organism in Danian of Seeland; GRÖNWALL (144).—(d) Gastropod *Thyca* on *Stellaster incisus*; BEDFORD (25) p. 295.—*Thyca* and *Stylifer*, molluscs parasitic on *Linckia*; HUBRECHT (165) p. 328.—(e) An amphipod crustacean with thoracic leg adapted for clinging to arms of *Ophiura brevispinis* which it resembles in colour; GRAVE (136) p. 85.—(f) Of *Antedon*, complete list, incl. holotrichous Infusorian non-descr.; CUÉNOT (75) p. 262, fig. 95.—*Hippolyte* a macrurous crustacean commensal with *Antedon rosacea* and simulating its varied colour; MALARD (220) p. 28.—*Saxicava* boring stem of *Acrochordocer.*; LISSAJOUS (195) p. 16.

ix. Echinoderms as Food:—Fuegians eat sea-urchins and starfish in fabulous quantities, till their stomachs are tight as drums, notwithstanding continued indigestion due to economical methods of cooking; CARBAJAL (55) pp. 411, 412.—*Diadema saxatile* eaten by Malays; BEDFORD (25) p. 277.—*Strongylocentrotus* eaten by *Vulpes lagopus* in winter; LUCAS (208) p. 126.—*Hoplodactyla* [sic] eaten by *Luidia*; BEDFORD (25) p. 293.

x. Echinoderms as Geological Agents:—*Toxopneustes* and *Stichopus* swallow and triturate shells, thus forming shell sand; VERRILL (340) p. 330.

Echinoderm breccia in Hauterivian of Swiss Alps; TOBLER (329) p. 145.—Bed 15 cm. thick composed of *Rhabdocidaris horrida*; STRUEBIN (324) p. 336.—Brèche récifale à débris d'Echinides et de polypiers au sommet du Tithonique d'Aizy, Alpes françaises (p. 14), “couches entièrement constituées par des débris de *Cidaris cornifera*” in Aptian of Isère (p. 82); KILIAN & LORY (170).—Remanié fragments of Upper Danian Echinoderms form a conglomerate of Paleocene age, of which blocks are found in drift of Rügen and elsewhere (see III, B, ii, f); DEECKE (84).—Crinoid limestone, “marmorone” in Sinemurian of Central Appenines; MORENA (233) p. 183.—Bajocian *Murchisonae*—*Sowerbyi* beds, “Spatkalke”=Calcaire à entroques; TOBLER (328) p. 289.

(E.) MISCELLANEOUS.

i. Research and Instruction:—

- Preservation:**—Collection and preservation of *Echinodermata* for museum purposes; BRITISH MUSEUM (47).—Formalin destroys spicules of *Synapta*; HARTLAUB in DOEDERLEIN (93) p. 234.—Ice-cold alcohol suggested for preservation of *Hol.*; VERRILL (342) p. 583.
- Methods of research:**—Improved methods of studying segmenting ova; HAMMAR (149) p. 323.—How to rear *Ech.* larvae; MACBRIDE (213, 215).—Methods of preparation for study of minute anatomy of *Echinus*; CUÉNOT (75) p. 299.—Microscope sections of

- fossil Echinoid spines; HESSE (159) p. 193.—Microscopical examination of larva of *Ophiura brevispina*; GRAVE (135) p. 83.—Methods of preparation for study of minute anatomy of *Antedon*; CUÉNOT (75) p. 263.—Action of various reagents and stains on muscles and ligaments of *Antedon*, preparation of sections; BOSSHARD (44) pp. 72, 73, 88–90.
- c. **Museum Exhibits and Collections** :—List of historical specimens of Devonian *Ast.*, *Crin.*, *Cyst.*, and *Blast.* in Amer. Mus. Nat. Hist.; WHITFIELD & HOVEY (351) pp. 196–200.—Types of Conrad's Syrian fossils, incl. *Holaster syriacus*, *Echinus syriacus*, and *Cidaris* spines, found at Yale Univ.; BEECHER (26).—Mortimer Museum, Driffield, Chalk Echinoderms; SHEPPARD (305) p. 67.—Geological collections of Caucasian Museum, Tiflis; LEBEDEV (192).—List of fossil *Crin.* found near Mâcon, with the local collections and museums in which each sp. is represented; LISSAJOUS (195).—Collection of Niagara Echinoderms, Dr Johnston Pettit at Grimsby, Ont.; GRANT (133).
- Mode of preparing *Uintacr. socialis* for exhibition; BEECHER (27).—Preparations illustrating endoskeleton, joints, and muscles, in Mus. R. Coll. Surgeons; STEWART (318).
- d. **Instruction** :—Text-book account; PERRIER (262) pp. 244–276.—Ditto, elementary; PARKER & HASWELL (258) pp. 157–177.—Ditto, Spanish; SEGOVIA Y CORRALES (304).—Cram-book of facts of zoology, with references to Echinoderms *passim*, and system pp. 221–227; ECKSTEIN (102).—Questions and answers on *Echinodermata*; CATECHISM SERIES (58) pp. 67–74.—General, popular account, with diagram section of Starfish and picture of Echinoderms in an aquarium; SCHMEIL (300) pp. 459–464.—Palaeontology, full account with notes and revision by WACHSMUTH, SLADEN and others; ZITTEL & EASTMAN (369).—Numerous lithogr. figures of *Ech.*, *Crin.* of various geol. ages; TOULA (332).—Elementary lessons and experiments on *Asterias vulgaris* (p. 357), photographs of *Arbacia*, *Clypeaster*, *Echinorachnus*, *Archaster*, *Amphiura* (pp. 183–188); DAVENPORT (80).
- ii. **Economics** :—Small effect of man's war on starfish and holothurians (p. 13), injurious effects of trawling on *Oph.* and *Ech.* but not on *Hol.* and *Ast.* (p. 39); MCINTOSH (216).—Trepang fishery (*Hol.*) in Russian waters; KUSNETZOW (185) p. 84.
- iii. **Bibliography** :—Guide to literature of *Echinodermata* generally (p. 35), of *Pelmatozoa* (p. 211), of *Hol.* (p. 236), of *Stelleroidea* (p. 279), of *Ech.* (p. 238); BATHER (19).—Review of recent work; LUDWIG (211); ROULE (287).—List of writings,—on recent Echinoderm morphology; CUÉNOT (74) p. 458.—Relating to oceanic explorations of Prince of Monaco; RICHARD (282) pp. 123–140.—On Arctic *Hol.*; LUDWIG (209) pp. 172–178.—On littoral *Ech.* sub-antarctic America; MEISSNER (229).—On Arctic *Ast.*; LUDWIG (210) pp. 496–502.—On Arctic *Oph.*; GRIEG (139) pp. 282–286.—On recent *Oph.*, 608 titles; HAMANN (148) pp. 749–774.—On W. Indian *Oph.*, selected; VERRILL (341) pp. 383–385.—On Italian Miocene *Crin.*; NOELLI (243) pp. 3–5.—On Silurian *Crin.* chiefly American; WELLER (348) pp. 57–60: omissions supplemented; BATHER in Review.
- iv. **Historical, Popular notions, &c.** :—Obituary and appreciation of the work of W. P. Sladen; HOWES (164).—History of research on *Oph.*; HAMANN (148) pp. 775–780.—History of classifications of *Crin.* (p. 138), of work on *Cyst.* (p. 40), *Hol.* (GOODRICH, p. 218), *Ast.* (GREGORY, p. 240), *Oph.* (GREG., p. 260), *Hol.* (GRIG., p. 283): BATHER (19).

Holothurians called 'pepinillos de mar' in Spain; SEGOVIA T CORRALES (304) p. 166.—*Schizaster*, 'crozzi di morti' by Sicilian fishermen; COPPA (72) p. 36.—*Crin.* columnals, 'Indian beads'; BEEDE (29) p. 26.

(F.) AUXOLOGY.

- i. **General Principles:**—Recapitulation, stalked stage of *Antedon*; BERGH (32) p. 247.
- ii. **General Accounts:**—Of Echinoderm ontogeny, in so far as it throws light on phylogeny; BATHER (19) pp. 3-19.—Outline of life-history of *Echinus esculentus*, up to *Pluteus* stage; CHADWICK (59) p. 22, pl. v.—Ontogeny of *Oph.*; HAMANN (148) pp. 849 et seqq.—Development of *Ophiothrix fragilis* "observations personnelles"; APOSTOLIDÉS (17) p. 322, figg. 143-145.—Development of *Antedon*; CUÉNOT (75) p. 259, figg. 105-107.
- iii. **Formation of Gonads:**—In *Oph.*; HAMANN (148) p. 849.
- iv. **Oviposition, Fertilisation, and Segmentation:**—Sexual maturity correlated with size, which in turn depends on food-supply, proved by *Asterias forbesi*; MEAD (228).

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Asterias rubens at Wimereux ♂ ripe before ♀ (p. 763). *Echinocardium cordatum* shows protandric hermaphroditism (p. 762); GIARD (128).—Hermaphrodite Echinoderms, esp. a *Sphaerchinus granularis*, capable of self-fertilisation; VIGUIER (343).

Ovum of *Asterias glacialis* (figg. 16, 29), process of fertilisation in *Toxopneustes* (figg. 21-23), of an Echinoid after fertilisation (figg. 24-26), polyspermy in *Strongylocentrotus* (p. 48, fig. 28); BERGH (32).—Fertilisation (p. 850), segmentation etc. (p. 851) in *Oph.*; HAMANN (148).—Ova and fertilisation of *Ophiura brevispina*; GRAVE (135) p. 87.—Parthenogenesis normal, though exceptional, in *Toxopneustes*, *Arbacia*, *Sphaerchinus*; VIGUIER (343).

Protoplasmic connection between blastomeres as described in (123) Zool. Rec. 1887, proved from fresh researches on ova of *Echinus* and *Amphidetus* to be true cell-protoplasm and a primary structure, although secondary connections may form; HAMMAR (149).—General account of cellular physiology including references to Echinoderm ovum; WILSON (353).—For general physiological or cytological observations on ova or spermatozoa or sperm-ova of Echinoderms, see under II, F, viii.

v. **Larval Stages:**—

- a. Larval forms and their relations; HOUSSAY (163) pp. 327-330, figg. 267-272.—Of *Hol.*, *Ech.*, *Ast.*, *Oph.*, G. of Palermo, Jan. and Feb.; CAMPAGNA (54) p. 180.—At Falmouth during 1898, 1899; VALLENTIN (335).—Various, in plankton at Port Erin in 1900 with figures of *Hol.* pupa, Echinoderm blastosphere and gastrula, *Ast.* gastrula and later stages; CHADWICK (60).
- b. See (a).
- c. How to rear larvae; MACBRIDE (213, 215).—Pluteus of *Echinus esculentus*; CUÉNOT (75) p. 296.

- d. *Bipinnaria asterigera* in Valencia Harbour, Nov. 25; BROWNE (49) p. 685.
- e. Development, structure, and terminology of *Ophiopluteus*, with the various "species" after Mortensen; and discussion of the larvae of *Ophiura brevispina* (s. *olivacea*) type, and of viviparous *Oph.*; HAMANN (148) pp. 853–862.—Development of *Ophiura brevispina*, pupa larva, description of stages at 36, 42, 48, 60, 66, 120, 132, and 192 hours, comparison with larval development of *Asterina gibbosa*, *Asterias pallida*, and *Antedon*, gastrula supposed formed by delamination, see further under vi, e; GRAVE (135).
- f. *Antedon* development,—popular notes; BURBIDGE (52): Larva compared with that of *Ophiura brevispina*; GRAVE (135) p. 98.

vi. Organogeny:—

a. *Echinoderma*:—

- 7, 10. Origin of coeloms and mesoderm; BERGH (32) pp. 159, 178, 180.—Ditto, relations to *Coelentera*; HOUSSAY (163) pp. 403, 404, figg. 353–356.

b, c. *Holothurioidae* and *Echinoidea*:—Vacant.

d. *Astroidea*:—

- 2. Goto's views as to relations of plane of symmetry in larva and adult *Asterina* combated, no secondary bending of pre-oral lobe to right; MACBRIDE (214). [cf. e, 2.]
- 6. Origin of hydrocoel in *Asterina gibbosa*, a true right hydrocoel formed, not from left coelom as Goto says; MACBRIDE (214).
- 7. Development of coelom and perihæmal spaces in *Asterina gibbosa*, confirmation, with fresh figures, of his previous observations and criticism of Goto; MACBRIDE (214).—Relations of hydrocoel to enterocoel of larval organ; RITTER & CROCKER (283) p. 266.

e. *Ophiuroidea*:—

- 2. Relation of larva to adult; HAMANN (148) p. 864.—Bilateral symmetry of larva of *Ophiura brevispina* believed to coincide with that of adult, and to confirm Goto's conclusions as to *Asterias pallida*; GRAVE (135) p. 96. [cf. d, 2.]
- 5. Skeleton; HAMANN (148) p. 868 et seqq.
- 6. Discussion of views as to origin of hydrocoel; HAMANN (148) p. 862.—Hydrocoel independent outgrowth from archenteron, said to rotate through 360°; stone canal arises before dorsal pore and in radius 5, afterwards moving to r. adradius between 5 and 1, origin of podia, buccal tentacles formed after the next proximal pair; GRAVE (135).
- 7. Formation of coelom; HAMANN (148) p. 862.—Epigastric or aboral enterocoel supposed to arise from right anterior enterocoel; origin of perihæmal ring from pouches of hypogastric enterocoel and from l. anterior enterocoel, the latter being in interradius 5–1, and subsequently forming inner perihæmal ring; GRAVE (135).
- 9. Epidermis and nervous system; HAMANN (148) p. 867.—Origin of nervous system and subneural spaces [=epineurial canals, Auctt.] in *Ophiura brevispina*; GRAVE (135).

f. *Crinoidea*:—

- 12. Rudiment of gonads appears in [posterior] interradius CD of stalked larva, in no connection with axial organ, but close to an aboral sinus and lacuna as in *Hol.*, and as supposed to have been the case in *Cyst.*; RUSSO (292).

vii. Post-larval Growth-stages :—

- c. *Echinoidea* :—Addition of coronal plates, measurements of test and plates, growth of spines in specimens of *Rhabdocidaris annulifera* from 8 mm. to 57 mm. diam. (p. 275), measurements of 7 individuals of *Tennopleurus tereumaticus* from 24·5 to 37 mm. diam. (p. 281), growth-stages of *Laganum depressum* and *L. decagonum* figd., approximation in young (p. 284, pl. xxiii); BEDFORD (25).—Changes in composition of major ambulacrals during growth in *Hemicidaris*; LAMBERT (186) p. 477.
- d. *Astroidea* :—Rate of growth and consequent age of sexual maturity normally is entirely dependent on food-supply, as proved by observation of *Asterias forbesi*; MEAD (228).—Addition of rays in *Pycnopodia helianthoides* fully described, compared with *Labidiaster*, *Heliaster*, and contrasted with *Brisinga*; RITTER & CROCKER (283).—Neanic *Asterias rubens* (pl. ix), *A. hyperborea* (p. 199, pl. v), old and young *Rhegaster tumidus* compared (p. 221, pl. ix), of *Pteraster obscurus* (pp. 213, 215); DOEDERLEIN (93).
- e. *Ophiuroidea* :—Age-differences in *Ophiacantha* increase difficulties of determining spp. (p. 322), viviparous with 6-armed young *Ophiacantha anomala* (p. 335); VERRILL (341).—Young of *Euryale studeri*, with disc 2-7 mm. diam., descr.; LORIOL (207).—Young individuals of *Gorgonocephalus eucnemis* and *G. agassizi* with diameter of disc 2-25 mm., descr. and figd. (pp. 269-271), large, old, individuals of *Amphiura sundevalli*, their differences from younger, esp. in dorsal plating of disc (p. 266); GRIEG (139).
- f. *Crinoidea* :—Development of *Agaricocr.* inferred from variations of adult structure [ontogenetic evidence not apparent]; KLEM (173).—*Uintacr. socialis* varying from 20 mm. to 70 mm. in diameter on a single slab; BEECHER (27).
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Formation of chromosomes and centrosomes in *Echinus (Psamm-echinus) micropuberulus*; BOVERI (46) pp. 343-348, pl. xiii.—Pseudopodial processes from unripe ova of same; PROWAZEK (274) p. 305.—Duration of vitality of ova of *Echinus sphaera* in sea-water, the period most favourable for fertilisation, abnormalities of segmentation and polyspermy when fertilised too early or too late after emission; GEMMILL (125) pp. 163, 164.—Practical instructions for inducing artificial fertilisation and polyspermy in Echinoderm ova; BERGH (32) p. 275.

Spermatozoa of *Ech.*,—locomotion; PROWAZEK (274) p. 308: about 7 inches in still water; GEMMILL (125) p. 172.—Duration of vitality in (p. 170), influence of sea-water on vitality and activity (p. 168), activity prolonged by feeding with bouillon (p. 178); GEMMILL (125).

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ated ova, merogony, merogonic hybrids between *Echinus*, *Strongylocentrotus*, and *Sphaerechinus*, showing that chromosomes have no individuality and absence of nucleus may even favour fertilisation; DELAGE (85).—Discussion of the work of O. and R. Hertwig (1887), Boveri (1889), Morgan (1893), Loeb (1899), and reply to the criticism of his own work by Giard (1899) and Le Dantec (1899) with reassertion of his views on fecundation and merogony, all deduced largely from experiments on Echinoderm ova; DELAGE (86).—Criticism of Delage; ANDREWS (14); LE DANTEC (194).—Discussion of DELAGE (43) Zool. Rec. 1898, (67) Zool. Rec. 1899, LOEB (152) Zool. Rec. 1899, and ZIEGLER (230) Zool. Rec. 1898; THOMSON (327).—Segmentation in enucleated fragments of ova of *Psammechinus*; PROWAZEK (274).—A zymase ‘spermase’ extracted from spermatozoa, and a substance modified by it ‘ovulose’ extracted from ova, of *Echinus esculentus*, with criticism of PIERI (190) Zool. Rec. 1899; DUBOIS (98).—Criticism of PIERI and DUBOIS, extract of spermatozoa induces incomplete segmentation in unfertilised ova of *Sphaerechinus granularis* and *Arbacia pustulosa* respectively; WINKLER (358).

Absence of calcium from water causes separation of cells in segmenting ovum, in larvae, and in larval tissues of *Echinus* and *Sphaerechinus*, by acting on the connecting layer of the cells, but addition of calcium checks, and to some extent reverses, the process; HERBST (156).—Isolation of blastomeres in decalcified sea-water, different action of animal and vegetative elements, limits of gastrulation and pluteus-formation, studied in ova of *Echinus* and *Sphaerechinus*; DRIESCH (96).—Development of isolated segmentation cells, general resumé; BERGH (32) p. 196 and (33).—Complete ova or blastulae of *Sphaerechinus granularis* and *Echinus microtuberculatus* respectively, caused to fuse into one, which produces an individual and harmonious pluteus; DRIESCH (97).—Abnormal larvae experimentally produced, general resumé; BERGH (32) p. 212.

Hybrid larvae.—*Sphaerechinus* ♀ × *Strongylocentrotus* ♂ vary in type according to season, i.e. according to maturity of ♂ or ♀, and are fewer in proportion as ova are stale, but contrary is case with *Strongylocentrotus* ♀ × *Sphaerechinus* ♂; also *Echinus acutus* ♀ × *Strongylocentrotus* ♂, and × *E. microtuberculatus* ♂; but *E. acutus* ♀ × *Sphaerechinus* ♂, and × *Arbacia* ♂, and × *Echinocardium cordatum* ♂, also *Dorocidaris* ♀ and ♂ × *Sphaerechinus* and *Arbacia* ♂ and ♀, were less successful or quite failures; VERNON (337).—*Psammechinus miliaris* ♀ × *Asterias rubens* ♂, produce blastulae; GIARD (127).

Effect of environment (sc. temperature and change of salinity) on growth decreases from time of impregnation onwards, in case of larvae of *Strongylocentrotus lividus* and *Sphaerechinus granularis*; VERNON (338).

Mitosis induced in unfertilised *Arbacia* ova by deoxygenation, heat, ether, chloroform, and alcohol; MATTHEWS (226).—Ditto, to varying extent, by solutions of magnesium chloride, sodium chloride, and strychnine, and by freezing, with action of preserving fluids on the astrospheres thus formed; MORGAN (235).—Segmentation of ova of *Psammechinus* under influence of $MnCl_2$ (pseudopodia formed) and $MgCl_2$, also under pressure; PROWAZEK (274).—Development of larvae of *Ech.* stopped by pure NaCl solution; LOEB (197).—Effect of Mg, K, Na, and Ca ions on segmenting ova of *Ech.* similar to their effect on ova of *Fundulus*, which is described (p. 393), criticism of Herbst’s views as to substances necessary for development (n. 296); LOEB (198).—Effects of Mg, K, Na, Ca, and Li ions on ♀ of *Arbacia*, both separately and in conjunction with

controlled; solutions which allow the formation of a skeleton in the *Pluteus*; attempt to produce blastulae in unfertilised ova, by treatment with various solutions but without altering the concentration of sea-water; a long series of experiments leading to result that unfertilised ova of *Arbacia* placed for two hours in a solution of equal parts of $2^{\circ} n$ $MgCl_2$ and sea-water may reach pluteus stage; LOEB (199).—Experiments described in (199) repeated on unfertilised ova of *Strongylocentrotus franciscanus* and *S. purpuratus*, with additional precaution of sterilising sea-water, plutei produced; LOEB (201).—Development of unfertilised ova due not to the particular solution, but to concentration and increased osmotic pressure of surrounding medium, which causes abstraction of water from the ovum, successful results with same *Ech.* spp., also with *Asterias forbesi*; LOEB (202).—Short summary of preceding results and contrast with experiments on unfertilised ova of *Chaetopterus*, addition of K-ions without concentration induces development in this Annelid but not in Echinoderms; LOEB (203).—Criticism of Loeb's conclusions as to influence of chemicals in parthenogenesis; the results seem rather due to relative dehydration and consequent osmotic pressure; BATAILLON (18).—Experiments of Loeb repeated without success on ova of *Arbacia*, *Toxopneustes*, and *Sphaerechinus granularis*; VIGUIER (344).—Facts of normal parthenogenesis casting doubt on results of Loeb; VIGUIER (343).—Parthenogenetic partial development of *Asterias* ova under influence of $MgCl_2$, $6H_2O$; GIARD (127).—Parthenogenesis in *Ech.*, precautions needed to prove it, a criterion is the slowness of development, induced by saline solutions, experiments of Loeb (supra) defended against Viguier's criticism (supra), but process due not to ions but to dehydrating action of the salts; GIARD (128).

III. DISTRIBUTION.

A. GEOGRAPHICAL.

- i. **General**:—State of knowledge of distrib. of Echinodermata; ORTMANN (254) p. 91.—Inshore migration of *Ech.* probably due to food-supply, but may be connected with breeding; GEMMILL (125) p. 179.—Theoretical considerations of distrib. of spp. and var. of *Ech.* and *Ast.*, effect of habitat and isolation, specific centres; BEDFORD (25) pp. 272, 287.—Echinoderms of deep sea; CHUN (63) pp. 485–496.—Evidence against bipolarity afforded by Antarctic *Ech.* and *Oph.*; KOEHLER (181).—Contrast of Arctic with sub-Antarctic *Oph.*; GRIEG (139) p. 281: see also sub v, vi.
- ii. **Atlantic Ocean and adjacent Seas**:—General account of Echinoderms collected on voyages of Prince of Monaco, esp. spp. of *Dytaster*, *Stylocaster*, *Freyella*, *Paragonaster*, *Hymenaster*, *Antedon*, *Pentacor*, *Rhizoor.*; RICHARD (282) pp. 75–81.—N. Atlantic generally, *Solaster papposus* var. nov. *squamata*; DOEDERLEIN (93) p. 208. Scandinavia:—Norway. Fjords, popular account of fauna, incl. Echinoderms; GRIEG (140).—Kanstadfjord on Hinnø, 68° – 69° N., *Asterias stellionura*; NORDGAARD (246) p. 24.—Puddefjord near Bergen, spp. of *Echinus*, *Strongylocentrotus*, *Asterias*, *Ophiocoma*, *Cucumaria*; NORDGAARD (245) p. 8. German coasts, popular account of Echinoderms; MARSHALL (225).—Holland, Zwijn, *Asterias*, *Echinocyamus*; LAMEERE (189) p. 21.—Belgium, key to spp. of Echinoderms; LAMEERE (186) pp. 30–37. British Coasts:—*Solaster papposus*, var. nov. *anglica*; DOEDERLEIN (93) p. 207.—Distribution of *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.* S.W.

corner of I. of Man (pp. 38, 39, pl. i), in Port Erin Bay (pp. 49, 50, pl. iii); HERDMANN (157).—Port Erin, plankton, larvae of *Ech.*, *Ast.*, *Oph.*, and *Hol.*; CHADWICK (60).—W. Coast of Ireland, Valencia Harbour, *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.*, and nature of bottom; BEAUMONT (24) pp. 796, 797: *Bipinnaria* of *Luidia*; BROWNE (49) p. 685.—English Channel,—Salcombe Estuary, *Hol.*, *Ech.*, *Ast.*, *Oph.*; ALLEN & TODD (7) p. 187.—Falmouth, various larvae; VALLENTIN (335).

French Coasts:—Channel, Atlantic, Mediterranean, commoner Echinoderms; CLEVES (70).—Key to all spp. of Echinoderms; ACLOQUE (1) pp. 454–466.

Mediterranean:—G. of Palermo, larvae of *Hol.*, *Ech.*, *Ast.*, *Oph.*; CAMPAGNA (54) p. 180.—Coasts of Morocco, the Arctic sp. *Elpidia glacialis*, also n. spp. of *Ankyroderma*; PERRIER (264) p. 177.—Black Sea, Echinoderm fauna restricted to *Synapta* 1 sp., and *Amphiura* 2 spp., all very small, but *Ech.* spines are brought in by the Bosphorus under-current; MURRAY (238) pp. 685, 695.

N.W. Coast of Africa:—Liberia, n. sp. of *Ophiocnemis*; LORIOL (207).

American Coast:—Distrib. of *Ophiura brevispinosa*; GRAVE (135) p. 84.—Canada, list of *Ech.* dredged by 'Challenger'; AMY (10).—Wilmington, N. C., *Asterias*, *Arbacia*, *Toxopneustes*; WILSON (354).

—Beaufort, N. C., occurrences and breeding periods of *Ech.*, *Ast.*, *Oph.*, *Hol.*; WILSON (355) p. 350.—West Indian region,—complete list of *Oph.*, spp. of *Ophiura*, *Ophiopeza*, *Pectinura* Forbes, *Ophio-paepele*, *Ophiolepis*, *Ophiosoma*, *Ophioceramis*, *Ophiothyreus*, *Ophier-nus*, *Ophioglypha*, *Ophiocten*, *Ophiomusium*, *Ophiolipus*, *Ophiomastus*, *Ophiophyllum*, *Ophiopyren*, *Ophioconis*, *Ophiothrix*, *Ophiocoma*, *Ophiopsila*, *Ophiactis*, *Amphiura*, *Amphipholis*, *Amphiodia*, *Amphio-plus*, *Amphilimna*, *Ophiocnida*, *Hemipholis*, *Ophiothragmus*, *Am-philepis*, *Ophionema*, *Ophioneophthys*, *Ophionereis*, *Ophioplax*, *Ophio-stigma*, *Ophiochytra*, *Ophiacantha*, *Ophialcea*, *Ophiacanthella*, *Ophiomitrella*, *Ophiolimna*, *Ophiopora*, *Ophiopristis*, *Ophiotreta*, *Amphipsila*, *Ophiomitra*, *Ophioplinthaca*, *Ophiocamax*, *Ophiothamnus*, *Ophiolebes*, *Ophioblenna*, *Ophiotaoma*, *Ophiochondrus*, *Ophiochondrella*, *Ophiocoelos*, *Ophioscisma*, *Astrogeron*, *Ophiobrysella*, *Ophiobrysa*, *Ophiomyces*, *Ophiohelus*, *Ophiomyxa*, *Ophiodes*, *Hemieuryale*, *Ophioplus*, *Sigsbeia*, *Ophiobrachion*, *Astrophyton*, *Gorgonocephalus*, *Astrocnida*, *Astrogomphus*, *Astroporpa*, *Astroschema*, *Ophiocreas*, *Astronyx*; VERRILL (341) pp. 372–382.—Jamaica,—Kingston Harbour, Old Harbour, Portland Bight, *Hol.*, *Pentaceros*, *Luidia*, *Oph.*, *Toxo-pneustes*, *Cidaris*; DUERDEN (100) p. 613: Bluefields Bay, *Toxo-pneustes*, *Hipponeoë*, *Echinometra*, *Cidaris*, *Oreaster*, *Astrophyton*; DUERDEN (101) p. 620: near Port Antonio, *Synapta*, *Mulleria*, *Stichopus*, *Chiridota*, *Toxopneustes*, *Cidarie*, *Echinometra*, *Diadema*, *Hipponeoë*, *Echinoneus*, *Briarius*, *Clypeaster*, *Mellita*, *Pentaceros*, *Linckia*, *Ophiocoma*, and spp. indett.; CONANT (71).—Bermuda, added spp. of *Ophiura*, *Ophiolepis*, *Ophiothrix*, *Ophiocoma*, *Ophio-pila*, *Ophiactis*, *Amphipholis*, and *Synapta*; VERRILL (342).

iii. Indian Ocean and adjacent Seas:—Echinoderms dredged by ss. 'Valdivia,' spp. of *Asthenosoma*, *Briseopsis*, *Dorocidaris*, *Echinothrix*, *Eucidaris*, *Phormosoma*, *Porocidaris*, *Schizaster*, *Spatangus*, *Sperosoma*, *Asterias*, *Bathybiaster*, *Brisinga*, *Culcita*, *Dipea-caster*, *Gnathaster*, *Luidia*, *Pontaster*, *Porania*, *Solaster*, *Styracaster*, *Zoroaster*, *Amphiura*, *Astrophyra*, *Ophiacantha*, *Ophiocten*, *Ophio-glypha*, *Ophioplithus*, and n. spp. of *Pelagothuria*, *Dermatodadema*, *Echinus*, *Gymnopatagus* n. g., *Palasopneustes*, *Stereocidaria*, *Strongylacentrotus*, *Gnathaster*, *Hyphalaster*, *Nymphaster*, *Pectin-*

Pentagonaster, *Stylocaster*, *Asteronyx*, *Ophiopyren*, *Eudiocr.*, *Metacr.*, *Pentacr.* [i.e. *Isoocr.*], *Rhizocr.*, the chief locc. being Cocos Is., S. Nias Channel, Zanzibar, Somali coast, Bouvet Id., Agulhas bank, G. of Aden, Maldives, G. of Guinea, Siberut Str., and Diego Garcia; CHUN (63).—*Oph.* collected by the 'Investigator' from 0 to 40 fms., list of 49 spp. of which 13 spp. and 2 varr. were new to science, figures of n. spp., but not of n. varr. ["il est à désirer que les zoologistes.....publient des descriptions accompagnées de dessins" p. 3], total number of Indo-Pacific spp. of *Oph.* given as 193; KOEHLER (179).—List of *Spatangoidea* in Indian Museum; ANDERSON (11) p. 10.

Red Sea, plankton, *Plutei* and young *Ast.*; STEUER (317) p. 412. Laccadive Sea, *Pourtalesia* (p. 10); between Bombay and Colombo, *Schizaster*, *Fibularia*, *Clypeaster*, *Peronella*, *Echinolampas*, *Eupatagus*, *Palaeopneustes* 200 at a haul, *Cidaris alcocki* 600-800 at a haul, *Lovenia*, *Zoroaster*, *Pontaster hispidus* 200 at a haul, *Brisinga* (pp. 6-8); Long Id. in the Moscos group, *Echinolampas* and *Pericosmus*; between Cocos Is. and Port Blair, *Coelopleurus*, *Platybriussus*, *Salenia*, *Trigonocidaris*, *Dorocidaris*, *Phyllacanthus*, *Rhabdocidaris*, *Laganum*, *Lovenia*, *Pericosmus* (p. 5); Andaman Sea, *Cionobriussus* (p. 10); Andaman Is., Casuarina B., *Echinodiscus*, *Laganum* (p. 11), Paget Id., *Diadema*, *Brissus carinatus* (p. 13), Craggy Id., *Diadema*, *Echinothrix* (p. 13), Lamia B., *Echinostrephus* (p. 14); Invisible Bank, *Metalia*, *Echinoneus*, *Diadema*, *Cidaris*, *Parasalenia gratiosa* (p. 16); ANDERSON (11).

Singapore and Malacca, spp. of *Rhabdocidaris*, *Diadema*, *Tennopleurus*, *Salinacis*, *Laganum*, *Arachnoides*, *Echinodiscus*, *Lovenia*, *Metalia*, and *Brissus*, and n. sp. of *Asthenosoma*, with general remarks on their distrib. (p. 272), spp. of *Archaster*, *Astropecten*, *Luidia*, *Iconaster*, *Goniodiscus*, *Stellaster*, *Anthenea*, *Pentaceros*, *Culcita*, *Palmipes*, *Retaster*, *Patiria*, *Asterina*, and n. spp. of *Craspidaster* and *Astropecten*, with general remarks on their distrib. (p. 287); BEDFORD (25).—Singapore, n. spp. of *Ophiocnemis* and *Euryale*; LORIOL (207).—Ternate,—spp. of *Synapta*, *Chiridota*, *Stichopus*, *Holothuria*; MARENZELLER (221): list of *Ech.*, *Ast.*, *Crin.*, and *Oph.*, incl. *Ophiomastix luetkeni* n. sp., last also from Cebu; PFEFFER (207).

Christmas Id., list of *Ech.*, *Ast.*, *Oph.*, determined by F. J. Bell; ANDREWS (13) p. 116.

iv. Pacific Ocean and adjacent Seas:—N. American coast, list of *Ech.* with localities; ORCUTT (253).

Peru, n. sp. of *Ophidiaster*; LORIOL (207).

New Zealand:—Otago, 10-30 fathoms, *Astrogonium*, *Asterina*, other *Ast.* and *Hol.*; BENHAM (30).—*Ophiocreas constrictus* n. sp., first Astrophytid recorded from N. Z. waters; FARQUHAR (107).

Japan, n. sp. of *Antedon*; LORIOL (207).

v. Arctic Ocean and adjacent Seas:—Geogr. and bathymetric distrib. of Arctic and sub-Arctic *Hol.*, with table of comparative horizontal distrib. (p. 168), and of vertical (p. 170), and general discussion (pp. 169-172); LUDWIG (209).—Ditto *Ast.*, with special reference to Spitzbergen; LUDWIG (210) passim, esp. pp. 492-495.—From Tromsø to Spitzbergen and Bear Id., spp. of *Strongylacentrotus*, *Schizaster*, *Asterias*, *Solaster*, *Cribrella*, *Pteraster*, *Hymenaster*, *Hippasteria*, *Rhegaster*, *Ctenodiscus*, *Pontaster*, *Leptoptychaster*, *Ophioglypha*, *Ophioceten*, *Ophiopholis*, *Ophiacantha*, *Ophioscolex*, *Gorgonocephalus*, *Antedon*, *Cucumaria*, *Ankyroderma*, *Trochostoma*, *Synapta*, note specially *Solaster syrtensis*, *Pteraster obscurus*, and

Ctenodiscus crispatus; *Hol.* by LUDWIG, and notes on Stations by HARTLAUB: DOEDERLEIN (93).—Spitzbergen, distrib. of Echinoderms, esp. *Antedon eschrichti* in Storfjord; SCHAUDINN (296) pp. 235, 236.—West Spitzbergen, Bear Id. Tromsö, *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.*, with depth, temperature, sea-bottom; HARTLAUB (153).—Seas around Spitzbergen, N. of Norway, Murman coast, White Sea, spp. of *Ophiopleura*, *Ophiura*, *Ophioceten*, *Ophiopholis*, *Amphiura*, *Ophiopus*, *Ophiacantha*, *Ophiocoilex*, *Gorgonocephalus*, followed by general discussion of distrib. of Arctic *Oph.*, comparison with sub-Antarctic; GRIEG (139).—Murman Coast, Echinoderms, pp. 447, 452, 458, esp. *Myriochirus*, *Trochostoma*, *Psolus*, *Schizaster*, *Hymenaster*, *Pentagonaster*, *Rhegaster*, *Lophaster*, *Asterias*, *Ophiopleura*, *Ophiocoilex*, *Antedon*; KNIPOVITCH (175).—White Sea, list of Echinoderms; SINITZIN (307) : *Solaster*; SINITZIN (308).

- vi. Antarctic Ocean and adjacent Seas.—Subantarctic America and S. Georgia, littoral spp. of *Cidaris*, *Arbacia*, *Echinocidaris*, *Strongylocentrotus*, *Echinus*, *E. neumayeri* n. sp., *Hemaster*, *Tripylus*, *Schizaster*, their general distrib. compared with the northern fauna; MEISSNER (229).—Collections of 'Belgica' *Sterechinus antarcticus* and *Amphipneustes lorioli* nn. genn. et spp., *Goniocidaris mortenseni* n. sp. and 14 n. spp. of *Ophioglypha*, *Ophioceten*, *Ophiopyren*, *Ophiopyrgus*, *Ophiomastus*, *Ophiacantha*, *Ophiocamax*, and *Amphiura*; KOEHLER (180): contrasted with Arctic and Subantarctic faunas; KOEHLER (181).—Echinoderms dredged by sa. 'Valdivia,' *Pentactella*, and n. spp. of *Hyocr.* and *Bathyocr.*; CHUN (63).—Patagonia, curious account of *Hol.*, *Ech.*, *Ast.*, *Crin.*; CARBAJAL (55) pp. 411, 412.

B. GEOLOGICAL

(i) GENERAL

Geol. distrib. of Holothurians, critical review of alleged fossil *Synapta*; SPANDEL (313).—The concentration in limited areas of numerous supposed species of *Dolatocr.*, *Batocr.*, and *Platycr.*, contrasted with the known distribution of plants and animals; KLEM (173) p. 176. *Crin.* columnals of uncertain age as drift in Pliocene sand near Bonn; STOLLEY (321) p. 46.

(ii) CAINOZOIC.

- a. General :—Japan, *Crin.*, *Ast.*, *Ech.*, generic names only, with localities in Japanese; YOSHIWARA (361) pp. 1, 2.—Japan and Formosa, *Ech.*, generic and specific names in Latin, localities in Japanese; YOSHIWARA (362) pp. 8, 9.—Tertiary? of Pemba Id., E. Africa, *Salmacis*?, *Amblynurus*, *Clypeaster*, *Maretia*; WOLFF (360).—Late Tertiary of Caldera, Chile, *Encope chilensis*; MOERRICK (232) pp. 589, 609.
- b. Pleistocene :—Of various locc. on shore of Murman Sea, Arctic, *Strongylocentrotus droebachiensis* and *Ech.* spines (pp. 31, 32, 34, 36, 38–42), shore of White Sea, *Oph.* arm-fragments (p. 90); KNIPOVICH (176).—*Toxopneustes droebachiensis* beneath moraine at Bergen; REKSTAD (280).—Calabria, *Echinocyamus*; STEFANO (316): Monteleone, list of *Ech.* with spp. of *Rhabdocidaris*, *Arbacia*, *Echinolampus*, *Brissus*, *Brissopsis* new to loc.; AIRAGHI (4).—Nissetti near Aiastello in Catania, *Echinocyamus*, *Strongylocentrotus*, *Cidaris*; SCALIA (295) p. 9.

c. Pleiocene:—Near Civitavecchia, *Clypeaster*, *Schizaster*, *Dorocidus*; MELI (230) p. 332.

Middle Pleiocene:—Esplugas near Barcelona, *Cidaris*, *Clypeaster*; ALMERA (9) p. 760.

Lower Pleiocene:—Plaisancian, Gebel Chelloul, Egypt, n. sp. *Echinocardium*; FOURTAU (115) p. 62.—Plaisancian age of series with *Clypeaster aegyptiacus* at Gizeh, established by *Pecten* fauna; DEPÉRET (89) p. 403.—*Ech.* in British Crag compared with Amstelian, Scaldonian, and Diestian of Holland; HARMER (1907) p. 777, and (151) p. 330.

d. Miocene:—(Or? Pliocene) of Lindi, German E. Africa, *Clypeaster*, *Plesianthus*, *Echinolampas*, of Dunga, Zanzibar, *Mareta* and *peaster*; WOLFF (360).—Sommières (Gard), spp. of *Echinolampas*, and *Scutella*; ROMAN (285).—Umbria, spp. of *Echinolampas*, *Clypeus*, *Echinocyamus*, *Echinanthus*, *Schizaster*; VERRI & ANGELINI (1906) p. 259.—Appennines, *Spatangus*, *Conocyclus*; Neri (240) p. 415.—Camerina, *Brisopsis* and *Hemaster*; MARIANI (1906) p. 100.—Near Syracuse, *Clypeaster*, *Scutella*, *Schizaster*; COPPA (72) p. 100.—Porto Torres in Sardinia, n. sp. of *Heterocyclus*; AIRAGHI (1906) p. 100.—Theben-Neudorf, Hungary, *Clypeaster*, *Cidaris*; KORNHUBER (1906) p. 87: *Ech.*; TOULA (331) p. 8.—"Rudolitzter Tegel" E. Bohemia, *Diadema*; PROCHÁZKA (271) pp. 20, 146.—Mähren [Moravia] *Diadema*; PROCHÁZKA (270) pp. 9, 19, 31.—Clay-partings of Tschokkra in Kertsch peninsula, also marls with *Pecten denudatus* of Tarchan, yield *Oph.* arm-vertebrae similar to *Ephippiellum lomnense*; ANDRUSOV (15).—Burma, *Cidaris* spp. and *Clypeaster* sp. (pp. 28, 44), paucity of Echinoid fauna how explained (pp. 95, 109); *Pseudadiadema* sp. in Pegu group?; NOETLING (244).—Formosa, limestone containing Echinoderm [i.e. Echinoid] spines; NEWTON & HOLME (242).—Patagonian beds of various locc. *Hypechinus*, *Echinorachis*, *Schizaster*; HATCHER (154) p. 101.

Upper Miocene:—Upper Mediterranean series,—Mezőséger (1906) p. 100.—Torda, Siebenbürgen, *Spatangus*; northern half of Siebenbürgen basin, compiled list of *Ech.*; KOCH (178) p. 136.—Cacova, Siebenbürgen, *Clypeaster*; near Felső-Orbó, Siebenbürgen, *Clypeus*, *Schizaster*; LOERENTHEY (204) p. 61.—Leythakalk in Siebenbürgen basin, compiled list of *Ech.*; KOCH (178) p. 168: *Echinocyclus*, *Scutella*, *Clypeaster*, and *Ast.*; LOERENTHEY (204) p. 59.—Bácska, Leythakalk, near Csegez, Siebenbürgen, *Clypeaster* cf. *parvus*; Leythakalk, *Echinolampas* and *Clypeaster altus*; ROTH v. TEIL (286) p. 95, see also p. 98.—Vindobonian (between Tortonian and Helvetician) of Gebel Geneffe, Lower Egypt, *Ech.*; DEPÉRET (1906) p. 403).

Middle Miocene:—of Vena near Monteleone in Calabria, n. sp. *Conocyclus* and *Heterocyclus*; AIRAGHI (3).—Of Castelnuovo Monti, *Cidaris*, *Conocr.* (p. 123), *Dorocidaris*, *Spatangus* (p. 1). DEL BUE (87).—Upper Helvetician, "zona sabbiosa a *Pentacr. tuldii*", near Torino, spp. of *Pentacr.* [i.e. *Isoct.*] 1 nov., *Coelocidaris* [= *Rhizocr.*], *Antedon* 6 nov., and *Actinometra* 1 nov., 4 others new to Italy; NOELLI (243).—Helvetician II, Gebel Ramleh, Suez, spp. of *Clypeaster*, *Echinolampas*, and n. sp. of *Schizaster*; FOURTAU (115) p. 59.

Lower Miocene:—Lower Mediterranean series, near Czerne, Siebenbürgen, *Macropneustes*? *compressus*; KOCH (178) p. 100.—Upper Burdigalian near Ste Croix (Jura Vaudois) *Cidaris*, *Pecten*, *echinus*; DOUXAMI (95) p. 420.—Langhian, Marne scagliosa of Montedoro in Central Appennines, *Mareta*, *Hemaster*; MOEGLIN (1906) p. 100.

(234) p. 477.—Upper Burdigalian of Gebel-Geneffe, Lower Egypt, *Echinolampus*, *Scutella*, *Lovenia*, *Cidaris*, *Echinoneus*; DEPÉRET (89) p. 402.—Aquitanian of Acqui, Visone, and Monte Capriolo, considered as base of Miocene, lists of *Ech.*: ALESSANDRI (6).

Lower Miocene, Patagonian formation, *Cidaris antarctica*, *Toxopneustes precursor*, *Cyrtoma posthumum*, all n. spp.; ORTMANN (255) p. 369.

e. Oligocene:—Upper,—Lower Cerithienschichten, Offenbach am Main, n. sp. of *Synapta*; SPANDEL (313).

Lower Oligocene:—Sand in clefts of Muschelkalk at Bernburg, *Ech.* spines & plates; MERKEL & FRITSCH (231) p. 68.—Tongrian of Bormida basin, n. var. *Echinolampus*; AIRAGHI (5).—Lower Oligocene or Ligurian, Egypt, *Ech.*; BLANCKENHORN (37) p. 459.—Priabonian near Kairouan in Tunis, various *Ech.*, esp. *Scutella* and *Clypeaster*; FLICK (11).—Priabona beds, summary of Echinoderm fauna (p. 288), for spp. vide sub *Bourgueticir.*, *Conocr.*, *Crenaster*, *Cidaris*, *Leiocidaris*, *Rhabdocidaris*, *Porocidaris*, *Coptosoma*, *Cyphosoma*, *Orthechimus*, *Leiopedia*, *Echinocyamus*, *Siemondia*, *Laganum*, *Clypeaster*, *Echinanthus*, *Echinolampus*, *Ditremaster*, *Linthia*, *Schizaster*, *Prenaster*, *Parabriusus*, *Toxobriusus*, *Lambertia*, *Breynia*, *Hypsopatagus*, *Euspatangus*; OPPENHEIM (251).

f. Eocene:—at Ste. Croix, S. of France, *Echinus*, spp.; GROSSOUVRE (145) p. 65.—Plastic clay (Tarrasshone) of Fehmarn, Schleswig-Holstein, *Pentacr.*; STOLLEY (320) pp. 110, 133.—Vorderalpen,—Adelholzener Nummulitenkalk, *Conoclypeus*, *Echinocyamus* (p. 26): Eisenärzter beds, *Conoclypus*, “*Bourgueticrinus goniaster* [sic] erhält eine ausserordentliche Häufigkeit” (pp. 26, 28); Kressenberger beds, *Conoclypeus* (p. 33), *Prenaster*, *Echinanthus*, *Echinolampus* (pp. 37, 44): Grenzsandstein at Maurerschurf, *Bourgueticir.*, *Cidaris*, *Echinanthus*, *Echinopsis*, *Linthia* (p. 84); REIS (278).—Kirrit, Somaliland, *Conoclypeus*? GREGORY (136).—Near Port Willunga, S. Australia, *Cidaris*, *Lovenia*, *Scutellina*, *Fibularia*, *Echinolampus*, *Echinus*, and *Antedon*; CLARK (64) p. 5.—Mulgundawa near Wellington, S. Australia, *Cidaris*, *Echinus*, *Monostichia*, *Scutellina*, *Fibularia*, *Astrogonium*, *Pentacr.*, *Antedon*; TATE (326) p. 111.

Upper Eocene:—Marnes intragypseuses, Paris, *Macropneustes*; BOURSAULT (45).—Upper Mokattam (=lower Bartonian), Egypt, *Ech.*; BLANCKENHORN (37) pp. 437–440.

Middle Eocene:—S.E. Europe, horizon and distribution of *Euspatangus ornatus* discussed; OPPENHEIM (250) p. 115.—Untere Grobkalk Schichten, Gyaluer Alps, Hungary, *Psammechinus*, *Sismondia*; PÁLFY (256) p. 64.—Egypt,—n. spp. of *Coptosoma*, *Mistechinus*, *Brissopsis*; FOURTAU (115) pp. 31, 32, 42.—Lutetian II, characterised by *Euspatangus cairensis*, Lutetian I by *E. formosus*; FOURTAU (117) p. 56.—Lower Mokattam beds, *Ech.*; BLANCKENHORN (37) pp. 419–424.

Lower Eocene:—Egypt,—Lower Libyan beds of Farafrah Oasis considered in part Mid. Eocene because of *Schizaster foreatus* and *Micropis mokattamensis*; FOURTAU (116) p. 482.—Upper Suessonian or upper Libyan beds, *Ech.* (p. 415), Middle Suessonian or lower Libyan beds, Egypt, *Ech.* (pp. 410, 413); BLANCKENHORN (37).—Lower Libyan beds, distribution of *Conoclypus delanorei*; FOURTAU (116) p. 483: its occurrence at Gebel Galala el Baharieh; FOURTAU (119).—Lower Libyan at Gebel Haridi. *Rhabdocidaris nasillae* and spp. of *Conoclypeus*, *Echinolampus pneustes*, *Plesiopatangus*, and “*naster*”, *Megapneustes*, *Euspat*

sqq.), Farafrah Oasis, n. sp. of *Echinolampas* (p. 37), near Malfont, Arabian Chain, n. sp. of *Euspatangus* (p. 54); FOURTAU (115).—Lower Suessonian or Kurkur beds, Libyan desert, *Ech.*; BLANCKENHORN (37) p. 406.

Lowest Eocene:—Egypt,—Gebel Garah, W. of Assouan, *Bothriolampas*, *Porocidaris*; Gebel Gournah, W. of Thebes, formerly thought Cretaceous, but contains Eocene *Trachyaaster*: FOURTAU (116) p. 481.—Montian of Paris basin, discussion of fauna, incl. spp. *Cidaris*, *Goniopygus*, *Echinanthus*, *Cassidulus*; MUNIER-CHALMAS (237).—Echinoderm-breccia [or rather conglomerate] found in drift at Rügen, contains rolled fragments of *Ananchites sulcatus* et al., *Phymosoma princeps*?, *Goniaster*?, *Pentacr. bronni*, from the Upper Danian Saltholm Limestone, similar blocks in Holstein and Neubrandenburg; DEECKE (84): also in Mecklenburg; GEINITZ in Abstract: appears to be the same as a block with remains of *Pentacr.*, *Bourgueticr.*? and *Ech.* found in boulder clay at Limhamn, Scania, and supposed topmost Cretaceous or lowest Tertiary; LUNDGREN (212).

(iii) MESOZOIC.

- a. General:—Table of distribution of principal *Ech.* spp. from Permian to Toarcian; LAMBERT (187) p. 44.
- b. Cretaceous:—General distrib. of *Ech.* in Portugal, after De Loriol, with corrections, CHOIFFAT (62) p. 5.
- 1. Upper:—
Mokošín and Valy in Bohemia, *Ech.*; ZELIZKO (367) pp. 6, 10.—Podolia, spp. of *Holaster* and *Epiaster*; RADKEVICH (277) p. xxxvi.—Daghestan, *Ananchites*, *Holaster*, *Offaster*, *Inaster* [sic]; LEBEDEV (192) p. 29.—Dakota division, Austin Chalk at Cow Creek, Rio Grande, Texas, *Cidaris*; VAUGHAN (336) p. 19.—Ripley beds at Wilmington, N.C., *Cassidulus*; HOLMES (160) p. 129.
- Garumian:—divided between Cretaceous and Tertiary, near Tercis and Angumé, in S. of France, Orbitolite marls in valley of Garonne, and glauconitic limestone, *Ech.* faunas; GROSSOUVRE (145) pp. 59, 60, 65, 67.
- Danian:—Stevns Klint, *Ech.*; GRÖNWALL (142) p. 371.—Jylland, *Ananchites*, *Tennocidaris*; GRÖNWALL (143).—Seeland, bored spines [of a Cidarid]; GRÖNWALL (144).—Maestrichtian,—Trimmingham, Norfolk, spp. of *Cardiaster*, *Cidaris*, *Cyphosoma* [i.e. *Phymosoma*], *Echinoconus*, *Echinocorys*, *Phymosoma*, *Salenia*, *Stegaster*, *Goniaster*, *Ophiura*, *Bourgueticr.*, *Pentacr.* [i.e. *Isocr.*]; BRYDONE (51) p. 12.—Hachauer beds and Oberstdorfer sandstone, *Ananchites*; REIS (279) p. 94.—Ürmös, Siebenbürgen, *Stenonia*, *Cardiaster*; SIMIONESCU (306) pp. 9, 35 [placed in Lower Senonian in Zool. Rec. 1899].
- Rancocas formation, New Jersey etc., spp. of *Pentacr.*, *Goniaster*, *Cidaris*, *Salenia*, *Pseudodiadema*, *Coptosoma*; CLARK (66) p. 339.
- Senonian:—Kent, *Zeugopleurus rowei* n. sp.; GREGORY (137).—Near Dieulefit, Drôme, France, *Micraster*, *Echinocorys*, *Echinoconus*; PAQUIER (257) pp. 427, 430, 436.—Near Pribbernow, Stettin, Prussia, spp. of *Bourgueticr.*, *Cidaris*, *Micraster*, *Echinocorys*, *Offaster*; SCHMIDT (301) p. cxviii.—Westphalia, also Meudon and Italy spp. of *Diplodetus* n. g., *Plesiaster*, and *Cardiaster*, see IV, c; SCHLUETER (299).—‘Nierenthalschichten,’ *Micraster* (pp. 3, 4), ‘Götzreuterschichten,’ *Echinocorys* (p. 18); REIS (278).—Portugal.—*Pomaria delgadoi*, n. g. et sp. of *Ech.*; LORIOL (207): grès à *Hoplites vari*

var. *marroti*, *Ech.*; CHOFFAT (62) p. 228.—Sirab, Persia, *Hemiaster*; FRECH (124) p. 307.—Pjatigorsk, Caucasus, *Ananchytes*, *Galerites*; LEBEDEW (192) p. 31.—Matawan formation, New Jersey etc., *Hemiaster parastatus* (p. 330), Monmouth formation, *Catopygus pusillus*, *Cassidulus florealis* (p. 335); CLARK (66). Upper Senonian,—at Sorel (Eure), *Micraster*; FORTIN (114).—Zone of *Belemnella mucronata*, at Gaillyon (Eure), *Offaster*, *Echinoconus*, *Echinocorys*; FORTIN (113).—Rügen, *Cidaris*, *Phymosoma*, *Salenia*, *Echinoconus*, *Pyrina*, *Ananchytes*, *Cardiaster*, *Micraster*, *Goniaster*, *Oph.*, *Pentacr.*, *Bourgueticir.*, *Eugeniacr.*, *Antedon*; DEECKE (82) p. 71, & (83).—Finkenwalde, &c., Pomerania, *Ananchytes*, *Galerites*, *Cardiaster*, *Micraster*, *Holaster*, *Salenia*, *Cidaris*, *Phymosoma*, *Pentacr.*, *Eugeniacr.*, *Bourgueticir.*; DEECKE (82) pp. 55, 87, 90, 92, 94. Lower Senonian:—Chalk, Yorkshire, *Ech.* and *Marsupites* in Mortimer Museum; SHEPPARD (305) p. 67.—*Marsupites* zone of Brunswick, *Plesiaster*, *Cardiaster*, *Hemiaster*, *Ananchytes*, *Cidaris*, *Phymosoma* d'Arch. (pp. 417–420), concurrence of *Uintacr.* and *Marsupites* at Recklinghausen (p. 418); SCHLUETER (297).—Niobrara Chalk, localities of *Uintacr.* in Kansas, with mode of its occurrence; BEECHER (27).—Rochester, Gravesend, and Croydon areas, England, spp. of *Bourgueticir.*, *Ophiura*, *Oreaster*, *Mitaster*, *Pentagonaster*, *Metopaster*, *Calliderma*, *Nymphaster*, *Cidaris*, *Cyphosoma* [i.e. *Phymosoma*], *Echinocorys*, *Echinoconus*, *Micraster*, *Epiaster*, *Holaster*, *Cardiaster*; DIBLEY (92).—Elbthalgebirge, Saxony, spp. of *Catopygus*, *Micraster*, *Cidaris*; PETRACZEK (265) p. 35.—Couliacian of Pont de Peille, Alpes-Maritimes, *Epiaster*, *Micraster*; RIAZ (281) p. 770.—Santonian age of beds at Abou-Roach near Gizeh containing *Echinobrissus waltheri* and other *Ech.*, not Turonian as R. B. Newton maintains; FOURTAU (120) p. 631: spp. of *Rhabdocidaris*, *Salenia*, *Orthopsis*, *Cyphosoma abbatei*, *Holctypus excisus*, and n. spp. of *Echinobrissus*, *Hemiaster*; FOURTAU (115) pp. 17–24: *Hemiaster* aff. *journelii*, *Rhabdocidaris crameri*, *Echinobrissus waltheri*; BLANCKENHORN (36) p. 39.

Senonian and Turonian:—off coast of Kent and Sussex, list of *Ech.*, *Ast.*, *Oph.*, and *Crin.* according to zones (pp. 361–363) with local details (passim) and special notes on spp. of *Cardiaster*, *Cidaris*, *Cyphosoma*, *Discoidea*, *Echinoconus*, *Echinocorys*, *Epiaster*, *Glyphoclypus*, *Hemiaster*, *Holaster*, *Micraster*, *Salenia*, *Zeuglopseurus*, *Bourgueticir.*, *Marsupites*, *Pentacr.*, *Uintacr.* (see IV, c, f); ROWE (288).—At Lewes, Sussex, *Micraster*, *Cidaris*, *Echinocorys*, *Salenia*, *Holaster*, *Bourgueticir.*; STRAHAN (322).

Turanian:—of Rochester, Gravesend, and Croydon areas, England, spp. of *Bourgueticir.*, *Pentacr.*, *Cidaris*, *Cyphosoma* [i.e. *Phymosoma*], *Echinocorys*, *Echinoconus*, *Micraster*, *Holaster*; DIBLEY (92).—Saxony, faunal lists, *Ech.*, *Ast.*, *Crin.* in zones of *Inoceramus labiatus* and *I. brongniarti*; PETRASCHECK (266) passim. Upper Turonian,—Grislow Id., Pomerania, *Micraster*, *Ananchytes* (p. 36), Wollin Id., *Bourgueticir.*, *Stellaster*, *Micraster*, *Insulaster*, *Holaster*, *Ananchytes*, *Cyphosoma*, *Cidaris*, *Hol.*; DEECKE (82) p. 42.—*Cidaris* spines among other fossils washed from now vanished Upper Turonian marls into the late Pleistocene loam of the former Kummerner See in Bohemia; MATOUSCHEK (227).—‘Weissenberger Pläner’ near Rynholec, N.W. of Prague, spine of *Cidaris reussi*; ZELIZKO (364) p. 175.—Near Cracow, *Galerites*, *Holaster*; WISNIOWSKI (359) p. 241.—Portugal, *Trochodiadema abramense* n. g. et sp. of *Ech.*; LORIOL (207).

Turonian and Cenomanian:—Portugal, *Ech.*; CHOFFAT (201) pp. 150, 155, 159, 163, 166, 172, 179, 185, 192, 193, and

through previous pp.—Couche à *Ostrea columba*, at Mondégo *Anorthopygus*; CHOIFFAT (61) & (62) p. 199.—Calcaire oolitique à *Anorthopygus*, at Mondégo, *A. michelini*, *A. orbicularis*; CHOIFFAT (61).—Turonian age of beds at Abou-Roach near Gizeh, containing *Cyphosoma abbatei* and *Periaster roachensis*, not Cenomanian as Blanckenhorn maintains; FOURTAU (120) p. 630: *P. roachensis* n. sp. perhaps = the *Hemiaster fourneli* often quoted from this loc. FOURTAU (115) p. 24.

Cenomanian:—of Rochester, Gravesend, and Croydon areas, England spp. of *Discoidea*, *Pseudodiadema*, *Holaster*; DIBBLEY (92).—S Dauphiné, France, *Discoidea*, *Holaster*, *Pseudananchys* (hitherto known only from Spain and Algeria); PAQUIER (257) p. 402.—Les Moulins, Alpes-Maritimes, *Holaster*; RIAZ (281) p. 768.—Urschelau, Bavarian Alps, *Discoidea*; SOEHLER (311) p. 41.—Nea Cracow, *Cidaris*, *Discoidea*; WISNIEWSKI (359) p. 240.—Silberbachthal, S. of Hermannstadt in Siebenbürgen, *Cidaris*, *Holaster* BLANCKENHORN (38) p. 25.—'Hellkofener Mergel' (= Priessene Schichten), *Cidaris*, *Antedon*; BRUNHUBER (50).—Brancaleone in Calabria, *Hemiaster*, *Epiaster*; DE STEFANO (90) p. 31.—Cenomanian with *Holctypus cenomanensis* and *Hemiaster pseudo-fourneli* a Gebel Galala el Bahariyah, Egypt, supposed Senonian by Schweinfurth 1887; FOURTAU (119).—Beharieh Oasis, Egypt, n. spp. of *Cidaris* and *Rhabdocidaris*; FOURTAU (115) p. 6.—W. coast Red Sea Galala and Arabian deserts, *Hemiaster cubicus* (pp. 28, 37); Libyan desert, *H. lusitanicus*, *Cyphosoma abbatei*, *Heterodiadema libicum*, *Diplopodia marticensis*, *Linthia oblonga*, *Claviaster cornutus*, *Echinobrissus* (pp. 34, 36, 38); Sinai, Arabian desert, Beharieh Oasis Abu Roash (table, p. 33): BLANCKENHORN (36). [See also under Turonian.] Lower Cenomanian,—Upper Greensand, zone of *Pecten asper*, Warminster, Wilts., characteristic *Ech.* (p. 68, figs 44–46), Warminster beds generally, list of *Ech.* and *Crin.* (p. 246), 'gaize' of Devizes, *Ech.* (p. 258), of C. la Hève, *Ech.* (p. 399), of England generally, *Ech.*, *Ast.*, *Crin.* (p. 477); JUKES-BROWNE (169). Vraconnian and Albian:—Red Chalk,—of Yorkshire wolds and Speeton, *Ech.*, *Crin.*; JUKES-BROWNE (169) p. 314.—Goulceby, Lincs., *Pentacr.*; CARTER (57).—Vraconnian near Uzès (Gard.), n. spp. of *Epiaster* and *Catopygus*; LORIOL (207).—Upper Gault of England, *Ech.*, *Crin.* (pp. 60, 477), Lower Gault of England, *Ech.*, *Crin.* (pp. 52, 477), Gault of Wissant, N. France, *Ech.* (p. 381), zone of *Ammonites inflatus* in Aube, Marne, and Ardennes, *Ech.* (p. 394); JUKES-BROWNE (169).—Phosphatic bed near Rencurel (Isère), *Diplopodia*, *Tylocidaris*, *Peltastes*, *Discoidea*, *Echinoconus*, *Catopygus*, *Caratomus*, *Hemiaster*, *Holaster*; KILIAN & LORY (170) p. 60.—Gault of Eze, Alpes-Maritimes, *Epiaster*, *Discoidea*, *Consulus*, *Holaster*; RIAZ (281) p. 769.—Albian, Matmata, Algeria, *Toxaster* and *Crin.* fragments; FICHEUR (108) p. 564.

2. Lower:—

Breccia near Ste. Croix (Jura Vaudois), *Toxaster*; DOUXAMI (95) p. 419.

Comanche series, Fort Worth Limestone near San Felipe Springs, and Washita Limestone near Chispa, Rio Grande, Texas, *Enallaster* VAUGHAN (336) pp. 16, 84.

Aptian:—"Couches à Orbitalines supérieures" Le Rimet, Les Ravis (Isère), *Salenia*, *Stonechinus*, *Tiaromma*, *Diplopodia*, *Cidaris*, *Stereocidaris*, *Phymosoma*, *Goniopygus*, *Codiopsis*, *Psammechinus*, *Magnosia*, *Pedinopsis*, *Orthopsis*, *Codichinus*, *Pygaulus*, *Holaster*, *Toxaster*, *Heteraster*, *Echinobrissus*, *Clypeopygus*, *Pyrina*, *Discoidea*, *Echinoconus*, and *Pentacr.*; KILIAN & LORY (170) pp. 56, 57.—Vaucluse

n. sp. of *Cidaris*, Barcelona, n. sp. of *Antedon*; LORIOL (207).—Lower Matmatas, Algeria, *Epiaster*, *Salenia*, *Holectypus*, *Pseudodiadema*, *Toxaster*, *Enallaster*; FICHEUR (108) pp. 566–574, & (109).—Aptian ? of Oued Cherf, *Epiaster restrictus* and *Cidaris* cf. *jullieni*; BLAYAC (39) p. 960.

Barremian:—"Couche à Orbitolines inférieure" vallée de la Bourne (Isère), *Cidaris*, *Stereocidaris*, *Hemicidaris*, *Goniopygus*, *Echinobrissus*, *Pygaulus*, *Heteraster*; KILIAN & LORY (170) p. 53.—Barremian (?) of La Turbie, Alpes-Maritimes, *Toxaster*; RIAZ (281) p. 766.

Neocomian:—Mt. Dealu Sasului, N.E. of Podu Dimbovitzei, Roumania, *Cidaris punctatissima*; POPOVICI-HATZEG (269) p. 550.—Karabagh, Caucasus, *Toxaster*; LEBEDEW (192) p. 15.—Urgonian, Hauterivian, and Valanginian of Portugal, revised list of *Ech.*; CHOIFFAT (62) p. 184.—Hauterivian,—near Choranche (Isère), *Ech.*, *Cidaris*, *Toxaster*, *Pseudodiadema*, *Rhabdocidaris*, *Rachiosoma*, *Pyrina*, *Cardiolampas*, *Dysaster*, *Asterias*, *Eugeniacr.*, *Pentacr.*, *Cyclocr.*; KILIAN & LORY (170) pp. 47, 48, 52.—Valangian,—Aizy-sur-Noyarez, *Collyrites*, *Cardiolampas* (p. 15), Malleval, Alpes françaises, *Cidaris*, *Rhabdocidaris*, *Holectypus*, *Cardiolampas*, *Dysaster*, *Holaster*, *Pyrina*, *Pygurus*, and *Pentacr.* (p. 50), "couches du balcon de l'Echaillon" Alpes françaises, *Pyrina*, *Cidaris*, *Goniopygus*, *Millericr.* (p. 37); KILIAN & LORY (170).—Neocomiekieselkalk, Acherbrücke bei Stansstad, Switzerland, Spatangids, esp. *Toxaster retusus*, and above it an Echinoderm breccia of Hauterivian age; TOBLER (329) p. 145.—Valangin near Neuchâtel, faunal lists, spp. of *Pseudodiadema*, *Holectypus*, *Psammechinus*, *Toxaster*, *Pygurus*, *Phyllobrissus*, *Collyrites*, *Pyrina*, *Cidaris*, *Rhabdocidaris*; BAUMBERGER & MOULIN (23) pp. 159, 166, 167, 171, 176, 190, 200.

c. Jurassic:—Catalogue raisonnée of spp. of *Pentacr.* [i.e. *Isoacr.*], *Extracr.*, *Balanocr.*, *Cyclocr.* [i.e. *Acrochordocr.*], *Apocr.*, *Millericr.*, *Eugeniacr.*, *Phylloocr.*, *Tetracr.*, and *Antedon*, found near Mâcon, France, in Bajocian, Bathonian, Callovian, Oxfordian, Rauracian, and Kimmeridgian; LISSAJOUS (195).—From Inf. Oolite to Kelloway,—Brauner Jura of N. Swiss Jura Mts., *Sowerbyi* beds, Aargau, *Galeropygus* (p. 302), *Humphriesi* beds, *Rhabdocidaris* (p. 308), Hauptrogenstein, *Clypeus* (p. 310), Movelier beds, *Hemicidaris* (p. 312), *Ferrugineus* oolite, *Clypeus*, *Echinobrissus*, *Holectypus* (p. 315), *Varians* beds, list of *Ech.* (p. 320), *Macrocephalus* beds, *Holectypus*, *Collyrites* (p. 324); MUEHLBERGER (236).—Near Cracow, *Clypeus*, *Collyrites*, *Holectypus*; WISNIOWSKI (359) p. 232.

Freeze-out hills, Wyoming, *Pentacr.*, *Asterias*; LOGAN (205) pp. 113, 119, 130.—Shirley stage, Wyoming, *Pentacr.*; KNIGHT (174) p. 386.

1. Upper:—

Karabagh, Caucasus, *Apocr.*; LEBEDEW (192) p. 16.

Portlandian (=Tithonian):—Bononian of Angoulême, *Hemicidaris*, *Echinobrissus*; GLANGEAUD (131).—"Brèche à *Cidaris glandifera* d'Aizy," *Cidaris*, *Rhabdocidaris*, *Diplocidaris*, & *Eugeniacr.* (p. 15), calcaire récifal d'Echaillon, Alpes françaises, *Cidaris*, *Diplocidaris*, *Rhabdocidaris*, *Dysaster*, *Grasia*, *Millericr.*, *Eugeniacr.* (p. 33); KILIAN & LORY (170).—Lombardy, *Collyrites*, *Metaporphinus*; MARLANI (222) p. 409.—(Upper) Mt. Dealu Sasului, N.E. of Podu Dimbovitzei, Roumania, *Cidaris glandifera*; POPOVICI-HATZEG (269) p. 550.

Malm near Liestal, Switzerland, various locc., spp. of *Collyrites*, *Ciduris*, *Hemicidaris*, *Acrocidaris*, *Glypticus*, *Dysaster*, *Pygurus*, *Asterias*, *Balanocr.*, *Pentacr.* [i.e. *Isoacr.*], *Apocr.*, *Eugeniacr.*; HUENE (168) pp. 350–365.

- Kimmeridgian:—Pomerania, *Echinobrissus*, *Pseudodiadema*, *Cidaris*, *Hemicidaris*, *Holctypus*, *Pygurus*; DEECKE (82) p. 24.
- Sequanian:—Gialdessa a Graslej, Harrar, E. Africa, *Hemicidaris abyssinica*; ANGELIS D' OSSAT & MILLOSEVICH (16) p. 156.—Corallian, Teutoburger Wald, *Cidaris*; STILLE (319) p. 17.
2. Middle:—
Oxfordian, Corps-de-Garde, Neuchatel, *Balanocr.*; ROLLIER & TRIBOLET (284). (Middle) “sphérites de la Croix” Switzerland, *Millerior.*, *Collyrites*, *Holctypus*, *Pseudodiadema*, *Goniaster*, *Cidaris* (p. 209), Rouges-Terres, *Balanocr.* (p. 214); KOBY (177).—Bernese Jura, *Cidaris*, *Pseudodiadema*, *Balanocr.*; LORIOL (206) p. 182. (Lower) Liesberg, Switzerland, *Millerior.*, *Cyclocr.* (p. 196); Châtillon, *Asterias*, *Balanocr.* (p. 200); KOBY (177).
- Callovian:—near Winckel, Ferrette, France, *Rhabdocidaris*, *Collyrites*; BLEICHER & MIEG (40).—Combe-Noire (Indre), *Collyrites*, *Echinobrissus*; BENOIST (31) p. 6.
2. 3. Callovian or Bajocian of Franz Josef Land, *Pentacr.* aff. *bajociensis*; POMPECKJ (268) pp. 51, 120.—Callovian or Bathonian, Bihendula, S. of Berbera, Somaliland, n. sp. of *Pseudodiadema*; GREGORY (136) p. 41.
3. Lower:—
Sundance formation of S. Dakota, *Asterias dubium* [sic, ? a mistake in genus, as it is by implication a Mollusc] and *Pentacr. asteriacus*; DARTON (79) p. 388.
- Bradfordian near Chateauxroux (Indre) *Hemicidaris*; BENOIST (31) p. 5.
- Bathonian:—Dept. de l'Indre, France, numerous *Ech.*; BENOIST (31) pp. 3, 4.—Near Belfort (Haute-Saône) n. sp. of *Hemipedina*; LORIOL (207).—*T. maxillata* beds near Dormach, *Cidaris koehlini* (p. 301), Upper Bathonian, *Discoidea* marl, and *Clypeus sinuatus* (p. 303); TOBLER (328).—Hauptrogenstein, zone of *Stephanoceras blagdeni*, near Liestal, Switzerland, Echinoderm-breccia with crowns of *Cainocr.* [i.e. *Isocr.*] *andreae*; HUENE (166) p. 347.
- Vesulian or ? Bajocian of St. Gaultier (Indre), coral-reef with spp. of *Cidaris*, *Hemicidaris*, *Asterocidaris*, *Pseudodiadema*, *Stomachinus*, and n. spp. of *Diplocidaris*, *Gymnocidaris*, *Pseudodiadema*, and *Phymechinus*; LAMBERT (186).
- Bajocian:—near Argenton, *Pygaster*, *Pseudodiadema*; BENOIST (31) p. 3.—Zones of *Sonn. sowerbyi*, *Sph. sauzeti*, and *Steph. humphriesi* near Basle, spp. of *Cidaris*, *Rhabdocidaris*, *Pseudodiadema*, *Hemipedina*, *Pedina*, *Collyrites*, *Pentacr.*, *Crenaster*; GREPIN (138) pp. 186-192, 200, 202.—*Humphriesianus* beds, Blauengebiet, *Cidaris* and *Rhabdocidaris* spp.; TOBLER (328) p. 291.—Zone of *Sonninia sowerbyi* near Basle, *Rhabdocidaris*, *Cidaris*, *Pentacr.*, *Cyclocr.*; STRUEBIN (324) p. 337.
- d. Lias:—Catalogue raisonné of spp. of *Pentacr.* [i.e. *Isocr.*], *Extracr.*, *Balanocr.* found near Mâcon, France, in Hettangian, Sinemurian, Charmouthian, and Toarcian; LISSAJOUS (195).—Lias of l'Yonne, spp. of *Miocidaris*, *Plegiocidaris*, *Rhabdocidaris*, *Cidaris*, *Eodiadema*, *Diademopsis*, *Diadema*; also general discussion of *Ech.* of this age and older, with n. spp. of *Mesodiadema* and *Eocidaris*, and numerous n. genn.; LAMBERT (187).—Lias, Laila Mts., Caucasus, *Pentacr.* [wrongly supposed early Tertiary]; BONNEY (43) p. 226.
- Domerian of Brescia, spp. of *Pentacr.*, *Cidaris*, and *Polycidaris*; BETTONI (34) pp. 8-11.
- Zone of *Amm. margaritatus*, Lincoln, *Ophioderma* and *Pentacr.*; WALTON (346).—“Amaltheenthon” in Teutoburger Wald, *Cidaris*,

- Pentacr.*; STILLE (319) p. 13.—*Lias* δ near Reutlingen, Württemberg, *Eugeniacr.*, *Cotylederma*, *Pentacr.*, *Cidaris*, *Microdiadema*; ZWIESELE (370) p. 20.
- Lower or Sinemurian,—Central Appenines, *Cidaris* spp. and *Diademopsis*; MORENA (233).—Valesacca in E. Carpathians, *Pentacr.*; UHLIG (334) p. 9.—Zone of *Ammonites capricornus* in Teutoburger Wald, *Pentacr.* (p. 13), beds with *Arietites obliquocostatus* in Teutoburger Wald, *Pentacr.* (p. 9); STILLE (319).
- Hettangian or Infra-Lias, “Palonoten-thon,” near Nellingen in Schwaben, *Cidaris*, *Pentacr.*; ENGEL (106) p. 240.—Zone of *Psilceras planorbis* in Teutoburger Wald, Prussia, *Pentacr.*, *Cidaris*; STILLE (319) p. 7.
- Rhaetic sandstone near Nürtingen in Schwaben, *Ophioderma*; ENGEL (106) p. 242.
- e. **Trias** :—Bear Id. near Spitzbergen, *Ech.* quoted from Boehm; ANDERSSON (12).—Near Gereuth, Krain, Austria, *Cidaris* and *Encrinus*; KOSSMAT (184) p. 90.—Province Kwei-tshou, China, *Entrochus rotiformis* n. sp.; KOKEN (182) p. 212.
- Upper :—Upper Cassian of Falzarego Valley, S. Tyrol, spp. of *Cidaris* and columnals of *Encrinus* and *Pentacrinus*; OGILVIE GORDON (132) p. 339 & (249) p. 309.—St. Cassian Limest., near Idria, Krain, Austria, *Encr. cassianus*; KOSSMAT (184) p. 95.—Betw. St. Cassian and Raibler beds, ‘Pachycardientuffe der Seiser Alp in Tirol’, spp. of *Encrinus*, *Pentacr.*, and *Cidaris*; BROILI (48) p. 369: spp. of *Encrinus* and *Cidaris*; ZITTEL (368) p. 349.
- Middle :—Partnach-schichten, Labergebirg, Bayern, *Cidaris*; SOEHLE (311) p. 2.—Muschelkalk,—of Jukbühel, N. of Kötschach, Carinthian Alps, *Encrinus*; GEYER (126) p. 120.—Of Mte. Presolana, Lombardy, *Encrinus*; MARIANI (223) p. 1254.—(Lower) near Recoaro in Vicentin, *Dadocrinus gracilis* beds, with *Milleracr.*, *Ophioglypha*, *Aspidura* (p. 97), Brachiopod limestone, with *Encrinus*, *Pentacr.*, *Cidaris* (p. 101); TORNQUIST (330).—“Trias moyen—marbre grisâtre de Mong-Tze (Yun Nan). *Encrinus liliiformis*? articles de la tige”; DOUVILLE (94) p. 595.

(iv) PALAEZOZOIC.

- a. **General** :—Synopsis of Palaeozoic *Asteroidea*, with distrib.; STUERTZ (325) p. 206.—Lower Palaeozoic, Bohemia,—list of *Cyst.* after Barrande but revised according to Jaekel's classification and nomenclature; PERNER (261): distribution of *Crin.*, *Scyphocr.*, *Mariacr.*, *Abacocr.*, *Bohemioocr.*, *Beyrichocr.*, *Laubeocr.*, *Caledocr.*, and *Ichthyocr.*; BATHER (21) pp. 102, 119.
- b. **Permian** :—Djulfa beds, Araxes gorge, Armenia, *Cyathocr.*, *Poteriocr.*?; FRECH (124) p. 285.—Greyish Marble of Yunnan-Y, near Ta Li Fou, China, *Crin.* columnals; DOUVILLE (94) p. 593.
- c. **Permo-Carboniferous** :—N. W. of Asia Minor, Tschamlyk of Tschobanoglu near Tsinarli Tsesme, columnals of *Poteriocr. quenstedti* (p. 93), Ari Maghara, *Crin.* (p. 94); ENDERLE (105), pl. viii.
- d. **Coal Measures** :—Black marble, near Hai-Phong, China, *Poterimates*; DOUVILLE (94) p. 593.
- Cottonwood formation, Nemaha co., Neb., *Fusulina* limest., *Archaeocidaris* spines (pp. 5, 6, 7), *Crin.* columnals (p. 7); Wabaunsee formation, Dunbar, Neb., *Zearc.*? *microspinae*. *Archaeocidaris*. *Crin.* columnals (p. 153), Cass co., Neb. *Z.*? (pp. 155, 157, 161, 166), *Archaeocidaris*.

phioocr. hemisphaericus (p. 163); PROSSER (272).—Coal-Measures Kansas, *Scaphiocr.*, *Zeacr.*, *Cerioocr.* [i.e. *Delocr.*], *Phialocr.*, *Aesiocr.*, *Erisocr.*, *Eupachyocr.*, *Hydreionocr.*, *Agassizocr.*, *Archaeodaris*, *A. agassizi*, which is a Burlington sp., *Oligoporoides*; BEDE (29) pp. 26-50.—Upper,—Kansas, n. spp. of *Scaphiocr.*?; *Zeacr.*?; BEDE (28).—Above Lehigh coal, $\frac{1}{4}$ mile W. of Kirtland station, Indian Territory, U. S. A., *Eupachyocr.*; GIRTY (1) pp. 542, 575. Lower,—Atoka quadrangle, Indian Territory, U. S. A., *Eupachyocr.*; GIRTY (130) pp. 545, 573.

e. Lower Carboniferous:—

Millstone Grit near Abergavenny, S. Wales, *Crin.*; STRAHAN GIBSON (323) p. 47.

Lists of fossils from the various limestones, coast of Northumbria, *Crin.* and *Archaeocidaris* (pp. 83-89) *Hol.*, *Ech.*, *Crin.* (pp. 1-131); SHARMAN & NEWTON in GUNN (147).—Lancashire, *Brahma* n. g.; SOLLAS (312).—Viewforth, Fife, *Archaeocidaris* sp. and *Cystoids*; KIRKBY (172) p. 490.—Lower and Upper Limestones numerous localities in Fife, *Hydreionocr.*, *Platyocr.*, *Poteriocr.*, *trocr.*, *Archaeocidaris*, *Chiridoto*, *Anchistrium*; PEACH (260) pp. 223, 244, 247, 248, 249.—Calcareous sandstone,—near Arbigla Kirkcudbright, Scotland, *Archaeocidaris*, *Craterioocr.*; PEACH (5) p. 65.—Fife, *Hydreionocr.*, *globularis*, *Archaeocidaris* sp.; PEACH (260) pp. 223, 241.—Zone of *Spirifer tornacensis*, Arpatschai val Armenia, *Platyocr.*, *Pachyocr.*, *Pentremites*; FRECH (124) p. 204. Carboniferous ?, Timor in drift, *Granatocr.* and *Crin.* column BOEHM (41) p. 555.—W. Australia, *Actinoocr.*, *Platyocr.*, *Poteriocr.*, *Pentremites* at Kimberley, *Cyathocr.* and *Poteriocr.* at Gascoyne MAITLAND (217) pp. 14, 15.

Warsaw ? (St. Louis) Limestone of Missouri, n. spp. of *Orbitremites* and *Pentremites*; ROWLEY (289).

Keokuk or Knob Limestone, near Salem, Ind., n. sp. of *Actino* WHITFIELD (350).

Burlington Limestone,—of Missouri, n. spp. of *Doryocr.*, *Bathy*, *Eretmoocr.*, *Agarioocr.*, *Codaster*, *Orbitremites*; ROWLEY (289) Louisiana, Mo., list of *Blast.*, *Cactocr.* *obesus* is from Upper Lower (p. 251); ROWLEY (291).—Iowa, *Majesticrinus* [sic] and *S. cotinus* [sic]; ORCUTT (252).

Kinderhook at Northview, Webster co., Missouri, *Crin.* column WELLER (347).

Chouteau Limestone, Missouri, list of *Blast.*; ROWLEY (291) p. 25.

f. Devonian:—List of historical specimens of Devonian *Ast.*, *Crin.*, *Blast.*, *Cyst.* in Amer. Mus. Nat. Hist., with corrected horizons localities; WHITFIELD & HOVEY (351) pp. 96-200.—Devonian Silurian, or Carboniferous) at Vallcarca and Putxet near Barcelon "Phyllades avec *Encrinus*"; ALMERA (9) p. 750.—Devonian, C. wall.—W. of Newtrain B., *Scaphiocr.*? (p. 146), Bedruthan St. *Sphaeroocr.*, *Crin.* columnals (p. 147), Mother Ivey's B., *Crin.* col. 146); FOX (121), and (122) pp. 346, 347, 351, 352, see also pp. 357, 358.—Upper,—*Protaster* said by DESTINEZ (71) Zool. Rec. 1899 to come from Assise d'Esneux is really from Assise de Souverain-DESTINEZ (91).

Middle,—Marzysz and Nowa Wies, Poland, *Crin.*; GUERICH (1) p. 378.

Lower,—Bundenbach, *Palaeosolaster*, *Echinasterias*, *Echinodus*, *Echinostella*, *Jaekelaster*, n. genn. of *Ast.*; STUERTZ (325) pp. 236.

Portage sandstone, Naples, N. Y. *Paropsonema*; CLARKE (68).

Middle.—Wapsipinicon stage, Upper Davenport beds, *Calceocr.*, *Megistocr.*, *Stereocr.* spp.; NORTON (248) p. 451.

Lower,—Oriskany of Be craft Mt., N. Y., *Edriocr. becraftensis* n. sp. (p. 62), elsewhere in N. Y., distrib. of *E. sacculus* (pp. 74, 75, 76); CLARKE (67).—Oriskany, distrib. of Echinoderm fauna, spp. of *Edriocr.*, *Homocr.*, *Technocr.*, and *Anomalocystis*; SCHUCHERT (303) pp. 292, 313.—Oriskany limestone, Peter's Valley, Sussex co., N. J., *Edriocr.*; WELLER (349) p. 43.—New Scotland beds, *Spirifer perlamellosus* zone, Nearpass, Sussex co., N. J., *Lecanocr.*; WELLER (349) p. 33.

- g. Silurian :—Lists of genera and spp. of *Crin.* with geogr. distrib.; WELLER (348) pp. 47–56: criticism of these lists, with special reference to England and Scandinavia, and of the geological conclusions based on them; BATHER in Review.—Czerwona Gora, Poland, *Scyphocr.*; GUERICH (146) pp. 368, 373.—Oessel, Scania, and Britain, *Lagarocr.*; JAEKEL (168).

Wenlock Limest., England, *Cicerocr.* n. g.; SOLLAS (312).—England, occurrence of *Arachnocr.*, *Callocr.*, *Calpiocr.*, *Cordylocr.*, *Dermidocr.*, *Hapalocr.*, *Lyriocr.*, *Mariacr.*, *Patellocr.*, *Pycnosaccus*, and *Stephanocr.*; BATHER in Review of WELLER (348).

Graptolithen-Schiefer des Steinboss bei Möscheid, also *Cardiolaschichten* des Steinhornes, *Crin.*; DENCKMANN (88) p. 151.

Llandovery of Gembloux, Belgium, *Sphaeronis*; MALAISE (219) p. 197.

Lower Helderberg,—here called Helderbergian and assigned to Lower Devonian, distrib. of Echinoderm fauna and discussion of its value for stratigraphic correlation, spp. of *Homocr.*, *Melocr.*, *Corymboocr.*, *Mariacr.*, *Cordylocr.*, *Marsupiocr.*, *Herpetocr.*, *Edriocr.*, *Aspidocr.*, *Hadrocr.*, *Camarocr.*, *Lepadocr.*, *Sphaerocystis*, *Anomalocystis*, and *Protaster*; SCHUCHERT (303) pp. 277, 279.—N. Y., character of *Crin.* and *Cyst.*, *Coronocr.*, *Cordylocr.*, *Camarocr.*, *Brachioocr.*, *Aspidocr.* said to be confined to it; CLARKE (67) pp. 86, 91.—Delthyris Limestone of Missouri, n. sp. of *Troostocr.* and *Stribalocystis*; ROWLEY (289).—Square Lake, Maine, *Lyriocr.*; WILLIAMS (352) p. 55.

North Haven series of Penobscot Bay, Maine, *Ichthyocr.*, *Eucalyptocr.*; BEECHER in SMITH (310) p. 22: quoted by WILLIAMS (352) p. 36.—Upper Niagara. The distribution of *Crin.* in the sea extending from N. Europe, by the Arctic regions, to the Mississippi valley, with special discussion of the Chicago fauna, and description of spp. of *Cyathocr.*, *Botryocr.*, *Ampheristocr.*, *Myelodactylus*, *Thysanocr.*, *Cyphocr.*, *Gazacr.*, *Lampterocr.*, *Siphonocr.*, *Lyriocr.*, *Macrostylocr.*, *Melocr.*, *Eucalyptocr.*, *Callocr.*, *Chicagocr.* (n. g.), *Periechocr.*, *Marsupiocr.*, *Platycr.*, *Ichthyocr.*, *Lecanocr.*, *Stephanocr.*, *Zophocr.*, also of *Archaeocr.* previously known only from Trenton Limestone, and *Corymboocr.*, *Crotalocr.*, and *Pycnosaccus* previously unknown from America; WELLER (348).—Chicago canal excavations disclosed 60 spp. of *Crin.* some only found elsewhere in England and Sweden; RADDIN (276) pp. 307, 308.—Niagara,—of N. Y., list of *Crin.* and *Cyst.* said not to pass up to Helderbergian; CLARKE (67) p. 93.—Hamilton, Ont., list of *Crin.* and *Cyst.*; GRANT (134) p. 130.—Missouri, n. sp. of *Stribalocystis*; ROWLEY (289).—Gower stage at Cowles quarry, Big Rock, Scott co., Ia., *Siphonocr.*, *Eucalyptocr.* spp.; NORTON (248) p. 438.—Niagara shales, Grimsby near Hamilton, Ont., *Stephanocr.*, *Caryocr.*, *Lyriocr.* p. 51.

Clinton or Niagara at New Sweden, N.Y.

Clinton group, Hamilton, Ont., *Palaeaster*, *Eucalyptocr.*, *Glyptocr.*; GRANT (134) p. 134.—Kentucky, D. D. Owen's identification of *Glyptocr. plumosus*, in 1857, criticised; FOERSTE (112) p. 72.

h. Ordovician :—Crinoid [or Cystid] limestone found near Sulitelma in Lapland; SJÖGREN (309).—Near Mojcza, Poland, *Cyst.*; GUERRICH (146) pp. 368, 370.—Fauquez in Brabant, Belgium, *Echinospaera munita*, *Sphaeronis punctatus*; MALAISE (219) p. 200.

Caradoc :—Sambre-et-Meuse, Belgium, *Glyptocr.*, *Echinospaera*, *Sphaeronis*; MALAISE (218) p. 806 : *Echinospaera baltica*, *Sphaeronis stellulifera*, *Glyptocr.*, *basalis*; MALAISE (219) p. 205.—Gembloux, Belgium, *Sphaeronis* (vel. *Echinospaera*) *stellulifera*; MALAISE (219) p. 196.—Assise à Cystidés, Montcada, near Barcelona, *Echinospaera*, overlaid by "Calcaire griotte à *Encriinus*"; ALMERA (8) p. 733–735 and (9) p. 743.

Chasmopeskalk near Loke in Lockne, Jemtland, *Caryocystis*; WIMAN (356).

Bed d 4 at Staňkovka, S.S.W. of Radotín, Bohemia, spp. of *Aristocystis* and *Craterina*; ZELIZKO (366) p. 90.

Jewe beds in Miocene drift, Sylt Id., *Cheiocr.*, *Echinospaera*; STOLLEY (321) p. 31.

Grès à *Calymene tristani*, Anse de Vauville, Manche, *Ascocrinus*; BIGOT (35).

Trenton and Hudson R. periods in Minnesota, list of spp. of *Dendrocr.*, *Meroocr.*, *Palaeocr.*, *Glyptocr.*, *Porocr.*, *Carabocr.*, *Cremocr.*, *Pleurocystis*, *Eurycystis*, *Glyptocystis*, *Palaeaster*, *Edrioaster*, *Age-lacr.*, *Lichenocr.*, *Cyclocystoides*; WINCHELL & ULRICH (357) p. cxxii.—Trenton Limestone of Silliman's Fossil Mt., Baffin Land, *Lichenocr.* and n. sp. of *Porocr.*; SCHUCHERT (302) p. 155.

Black R. group, Rockton, Ill., Wisconsin, and Kentucky, *Age-lacr. marginatus*; WINCHELL & ULRICH (357) pp. xciv, xcvi.

Lower Ordovician, Calciferous of Fort Hunter, N.Y., *Crin.* or *Cyst.* stem and plates; CLELAND (69) p. 19, pl. vi.

k. Cambrian :—Middle,—of Jinec, Bohemia, *Lichenoides*, *Mitrocystis*, *Lapillocystis*; ZELIZKO (365).

IV. SYSTEMATIC†.

(A.)—ECHINODERMA IN GENERAL.

General systematic account; ECKSTEIN (102) pp. 221–227.

Echinoderms classified as: Class, Anangiens, with Orders, Ophiurides, Asterides; Class, Angiophores, with Orders, Crinoïdes, Echinides, Holothurides; ACLOQUE (1).—Revised diagnosis of *Echinodermata*, and discussion of the division into Classes: *Cyst.*, *Blast.*, *Crin.* and *Edrioasteroidea*, which are *Pelmatozoa*, also *Hol.*, *Ech.*, and *Stelleroidea*, which are *Eleutherozoa*; BATHER (19) pp. 32–35.—*Echinodermata*

† A dagger prefixed to the trivial name of a species indicates that it is fossil; prefixed to the name of the author, it denotes that the reference is to the species in a fossil state; prefixed to the name of a genus, it indicates that all species of the genus here recorded are fossil, and the † is therefore not repeated before each name. The abbreviations *l. c.* and *op. cit.* refer only to the place or work quoted immediately before.

A name and reference quoted without further statement [*e.g. Ankyroderma danielseni*; PERRIER (264)] indicate that the quoted author's statement refers merely to locality or some question of slight importance. Further information can usually be gleaned from the cross-references under TITLES.

divided into five Classes: Holothurides, Palmatozoaires, Echinides, Asterides, Ophiurides; CUÉNOT (74) p. 437.

Asteroidea, vide sub *Ophiuroidea*.

Edrioasteroidea, though maintained as an independent Class by BATHER (19) and elsewhere, are in this Record dealt with under Cystidea (iv, g).

Eleutherozoa, grade of *Echinoderma*, diagnosis, divided into Classes, *Holothuroidea*, *Stelleroidea*, *Echinoidea*; BATHER (19) p. 217.

Ophiuroidea cannot be united in a Class with *Asteroidea*, since the resemblance is strictly superficial, and they differ from them as much as from any other Class of Echinoderms; HAMANN (148) pp. 746, 748.—No essential difference from *Asteroidea*, with which therefore they are united as *Stelleroidea* (q.v.); GREGORY in BATHER (19).—Related to *Ech.* rather than to *Ast.*, because of similar *Pluteus*, and alleged direct development in *Oph.* as in *Ech.* [!]; APSTOLIDES (17) p. 325.

Palmatozoa, diagnosis, relations of Classes, *Cyst.*, *Blast.*, *Crin.* and *Edrioasteroidea*; BATHER (19) p. 38.

Stelleroidea, Class of *Echinoderma*, with Sub-classes, *Asteroidea* and *Ophiuroidea*, discussion and diagnosis; GREGORY in BATHER (19) pp. 237-239.

Thecoidea Jaekel, vide *Edrioasteroidea*.

(B.)—HOLOTHURIOIDEA.

Holothurioidea diagnosed and divided into Orders, *Actinopoda* and *Paracrinopoda*, general account; GOODRICH in BATHER (19) pp. 218 et seqq.

Acanthotrochus; GOODRICH in BATHER (19) p. 234. *A. mirabilis*, geogr. and bathymetric distrib.; LUDWIG (209) p. 168.

† *Achistrum* [nonnunquam *Ancistrum*, sed melius *Ancistrum*] *nicholsoni*; PEACH (260) p. 223.

Achlyonice; GOODRICH in BATHER (19) p. 229.

Actinocucumis; GOODRICH in BATHER (19) p. 230.

Actinopoda, Order, diagnosed and divided into families, *Holothuriidae*, *Cucumariidae*, *Molpadiidae*, *Elpidiidae*, and *Pelagothuriidae*; GOODRICH in BATHER (19) p. 227.

Actinopyga miliaris; ANDREWS (13) p. 117.

Anapta; GOODRICH in BATHER (19) p. 234.

Ancistrum, vide *Achistrum*.

Ankyroderma; GOODRICH in BATHER (19) p. 233, fig. i. *A. danilevsoni*; PERRIER (264) p. 119. *A. jeffreysi*; LUDWIG in DOEDERLEIN (93) p. 229: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 162. *A. marocannum* [sic], n. sp. off Morocco; *A. loricatum*, n. sp. coasts of Spain; PERRIER (264) p. 119.

Bathyplotes; GOODRICH in BATHER (19) p. 227. *B. fallax* (p. 138); *B. natans*, known certainly only from W. coast Norway, habitat (p. 137); *B. tizardi* (p. 138): geogr. and bathymetric distrib. of each; LUDWIG (209).

Benthodites, err. pro *Benthodytes* (q.v.); PERRIER (264).

Benthodytes; GOODRICH in BATHER (19) p. 229. *B. glutinosa*; PERRIER (264) p. 119. *B. janthina*; RICHARD (282) p. 81, fig. 31. *B. lingua*; PERRIER (264) p. 119.

Benthogone rosea, descr. with var. [nov.] *cylindrica* and *4-lineata*; PERRIER (264) p. 117.

Capheira; GOODRICH in BATHER (19) p. 229.

Caudina; GOODRICH in BATHER (19) p. 223.

Cheiridota et *Cheirodota*, vide *Cheiridota*.

Chiridota; GOODRICH in BATHER

- ACLOQUE (1) p. 466. *C. discolor*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 165. *C. dunedinensis*, vide *Trochocidaris laevis*, habitat, geogr. and bathymetric distrib.; LUDWIG (2) p. 164. +*C. traguairi*; PEACH (260) p. 223.
- Cladodactyla*, individuals of this genus common in S. Patagonia; C. BAJAL (55) p. 411.
- Colochirus*; GOODRICH in BATHER (19) p. 230.
- Cucumaria*; GOODRICH in BATHER (19) p. 230, fig. iv: key to French spp.; ACLOQUE (1) p. 466: key to Belgian spp.; LAMEERE (188) p. 1. *C. calcigera*, habitat, geogr. and bathymetric distrib.; LUDWIG (2) p. 146. *C. elongata*; PERRIER (263) p. 300: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 147. *C. frondosa*; NOGAARD (245) p. 8: HARTLAUB (153) pp. 185, 191: LUDWIG in DOEDERLEIN (93) p. 229: habitat, geogr. and bathymetric distrib. not in Pacific, unless it incl. *C. californica* and *C. miniata*; LUDWIG (209) p. 141. *C. glacialis*, brood-pouch with young, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 144. *C. hyndmani*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 145. *incurvata*, described; PERRIER (263) p. 300. *C. lactea* incl. *C. terensis*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 1. *C. minuta*; LUDWIG in DOEDERLEIN (93) p. 229: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 141. *C. pentactes*; ALLEN TODD (7) p. 187: original drawings of dissections; GOODRICH in BATHER (19) p. 231, fig. iv. *C. pusilla*, geogr. and bathymetric distrib.; LUDWIG (209) p. 148. *C. typica*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 149.
- Cucumiidae*, diagnosis and discussion; GOODRICH in BATHER (19) p. 230.
- Deima*; GOODRICH in BATHER (19) p. 229, fig. iii.
- Deimatinae*, diagnosis; GOODRICH in BATHER (19) p. 229.
- Echinocucumis*; GOODRICH in BATHER (19) p. 230.
- Elpidia*; GOODRICH in BATHER (19) p. 229, fig. iii. *E. glacialis*, habitat, geogr. and bathymetric distrib., probably does not incl. species from S. of Australia; LUDWIG (209) p. 140: incl. *Tutela echinorum* R. Perr., coasts of Morocco; PERRIER (264) p. 117.
- Elpidiidae*, diagnosis, divided into sub-fam. *Psychropotinae*, *Deimatiinae*, *Elpidiinae*, general discussion; GOODRICH in BATHER (19) p. 227.
- Elpidiuinae*, diagnosis; GOODRICH in BATHER (19) p. 229.
- Enypnastes*; GOODRICH in BATHER (19) p. 229.
- Euphronides*; GOODRICH in BATHER (19) p. 229. *E. auriculata*, *E. tamani* (p. 118), *E. violacea* (p. 119); PERRIER (264).
- Euryprygus*; GOODRICH in BATHER (19) p. 233. *E. scaber*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 160.
- Gastrothuria*, n. g. of *Holothuriinae* with genotype *G. limbata*, n. sp., locality given; PERRIER (263) p. 299.
- Hoplodactyla*; GOODRICH in BATHER (19) p. 233. *H. sp.*; BEDFORD (19) p. 293.
- Holothuria*; GOODRICH in BATHER (19) p. 227: key to French spp. ACLOQUE (1) p. 466. *H. farcimen*; PERRIER (263) p. 299. *H. forficata*, original drawings; descr. as typical Holothurian; GOODRICH in BATHER (19) p. 219, fig. i. *H. impatiens*, section of body-wall; cit. p. 223, fig. ii: excretion by gonads; RUSSO (293). *H. mammilla*; PERRIER (263) p. 299. *H. nigra*, endoskeleton; STEWART (3) p. 222. *H. poli*, excretion by gonads; RUSSO (293). *H. tubulosa*, original drawing of dissection; GOODRICH in BATHER (19) p. 222, fig. 1. *H. tubulosa*, muscles; STEWART (318) p. 90: excretion by gonads; RUSSO (293).
- Holothuriidae*, diagnosis, divided into sub-fam. *Synallactinae*, *Holothuriinae*; GOODRICH in BATHER (19) p. 227.

- Holothuriinae*, diagnosis ; GOODRICH in BATHER (19) p. 227.
- Hypsilethuria* ; PERRIER (262) p. 275, fig. 206. *H. attenuata* distinguished from *Sphaeroturaria bitentaculata* Ludw. and *H. talismani*, descr. ; PERRIER (264) p. 116.
- Ilyodaemon* ; GOODRICH in BATHER (19) p. 229, fig. iii.
- Irpa* ; GOODRICH in BATHER (19) p. 229. *I. abyssicola*, habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 141.
- Kolga* ; GOODRICH in BATHER (19) p. 229. *K. hyalina* and *K. nana*, habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 140.
- Labidocemas* ; GOODRICH in BATHER (19) p. 227.
- Laetmogone* ; GOODRICH in BATHER (19) p. 229. *L. violacea*, incl. *L. spongiosa* Theel, *L. brongnarti* E. Perr., and *L. jourdani* Petit ; PERRIER (264) p. 116.
- Leptosynapta girardi*, breeding-period ; WILSON (355) p. 351.
- Meseres* ; GOODRICH in BATHER (19) p. 227.
- Mesothuria* ; loc. cit. *M. intestinalis* incl. *Holothuria verrilli*, habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 138.
- Molpadiidae* ; GOODRICH in BATHER (19) p. 233.
- Molpadiidae*, diagnosis and discussion ; GOODRICH in BATHER (19) p. 232.
- Muelleria* ; GOODRICH in BATHER (19) p. 227. *M. agassizi*, parasitic copepods ; EDWARDS (103).
- Myriotrochus* ; GOODRICH in BATHER (19) p. 234. *M. rinki* ; KNIPOVICH (175) pp. 452, 458 : habitat, geogr. and bathymetric distrib. ; LUDWIG (209) p. 166.
- Ocnus compressus*, n. sp. 627 metres, no locality given ; PERRIER (263) p. 301.
- Oneirophanta* ; GOODRICH in BATHER (19) p. 229. *O. alternata*, n. sp. no locality given, but = *O. mutabilis* E. Perrier, Explor. sous-marines, fig. 201 ; PERRIER (264) p. 117.
- Orcula* ; GOODRICH in BATHER (19) p. 230. *O. barthii*, geogr. and bathymetric distrib. (vide etiam *Phyllophorus drummondii*) and *O. luminosa*, probably syn. of *O. barthii*, spicules having been destroyed in specimens of that sp. ; LUDWIG (209) p. 152.
- Orphnurgus* ; GOODRICH in BATHER (19) p. 229.
- Paelopatides* ; GOODRICH in BATHER (19) p. 227.
- Pannychia* ; GOODRICH in BATHER (19) p. 229.
- Paractinopoda*, Order, diagnosis, incl. only fam. *Synaptidae* ; GOODRICH in BATHER (19) p. 234.
- Parelpidia* ; GOODRICH in BATHER (19) p. 229.
- Pelagothuria*, *P. natatrix*, position discussed ; GOODRICH in BATHER (19) p. 230, fig. iii. *P. ludwigi*, n. sp., Indian Ocean, general description, and three sketches from life ; CHUN (63) p. 511.
- Pelagothuriidae*, diagnosis, GOODRICH in BATHER (19) p. 230.
- Peniagone* ; op. cit. p. 229, fig. iii. *P. porcellus*, n. sp., 4060 metres, *P. verillum*, n. sp., no localities given ; PERRIER (264) p. 118.
- Pentactella laevigata*, Kerguelen ; CHUN (63) p. 252.
- Periamma roseum* ; PERRIER (264) p. 118.
- Phyllophorus* ; GOODRICH in BATHER (19) p. 230. *P. drummondii*, geogr. and bathymetric distrib., habitat, specimen with abnormal tentacles, approaching *Orcula barthii* which perhaps is syn. of this sp. ; LUDWIG (209) p. 155. *P. pellucidus*, habitat, geogr. and bathymetric distrib., variation in number of tentacles ; LUDWIG (209) p. 153.
- Prophylosoma*, nom. nov. pro "Phymosoma" Shipley, récemment proposé pour des Holothuries, non Haime ; LAMBERT (187) p. 54. [*Phymosoma* is not Shipley, but Quatrefages, not a Holothurian but a Gasteropod : the name *Physcosoma* is already proposed xx, p. 460, 1897), but objected to in 1898) because *Physcosoma* was

in error for *Physcosoma*. But since Selenka gave φύσκων as the derivation of his name, it should have been spelled *Physconosoma*, a form not liable to confusion with any name derivable from φύση. *Prophysmosoma* is therefore a syn. of *Physconosoma*.]

Pseudocucumis; GOODRICH in BATHER (19) p. 230.

Pseudostichopus; GOODRICH in BATHER (19) p. 227.

Psolidium; GOODRICH in BATHER (19) p. 230.

Psolus; GOODRICH in BATHER (19) p. 230, fig. iv : key to French spp.; ACLOQUE (1) p. 466. *P. fabricii*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 156. *P. nummularia*, n. sp. 1050 metres, no locality given; PERRIER (263) p. 301. *P. operculatus*, N. of Spitzbergen, 1000 metres, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 159. *P. phantapus*; KNIPOVICH (175) p. 458 : habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 155. *P. squamatus*; PERRIER (262) p. 274, fig. 205 : habitat, geogr. and bathymetric distrib., Theel's var. from W. Patagonia very doubtful; LUDWIG (209) p. 158.

Psychropotes; GOODRICH in BATHER (19) p. 229, fig. iii. *Psychropates* [sic] *buglossa*, incl. *P. grimaldii* Herouard; *P. fucata*: PERRIER (264) p. 119.

Psychropotinae, diagnosis; GOODRICH in BATHER (19) p. 228.

Psychrotrophes; GOODRICH in BATHER (19) p. 229.

Rhopalodina; GOODRICH in BATHER (19) p. 230, fig. iv.

Scotanassa; GOODRICH in BATHER (19) p. 229.

Scotodeima; GOODRICH in BATHER (19) p. 229.

Scotoplanes; GOODRICH in BATHER (19) p. 229.

Siphothuria incurvata, vide sub *Cucumaria*.

Sphaerothuria; GOODRICH in BATHER (19) p. 230, fig. iv : vide etiam *Hypothuria*.

Stichopus acanthomela and *S. diaboli* are both syn. of *S. moebii*; CLARK (66). *S. diaboli*; VERRILL (342) p. 583. *S. regalis*; PERRIER (263) p. 300 : copper; DUBOIS (99). *S. richardi*, new forms of spicules; PERRIER (263) p. 300. *S. sitchaensis*, geogr. and bathymetric distrib.; LUDWIG (209) p. 136. *S. tremulus*, parasitic gastropod; BONNEVIE (42): geogr. and bathymetric distrib., not known certainly N.E. of Finmark, unless "Holothuria calcarea" Sars of Jarzynsky from Murman coast be *H. ecalcarata*, which is syn. of this sp. (p. 136), to this is referred as var. *S. griegi* Oestergr. (p. 137); LUDWIG (209). *S. xanthomela*; VERRILL (342) p. 584.

Synallactes; GOODRICH in BATHER (19) p. 227.

Synallactinae, diagnosis; GOODRICH in BATHER (19) p. 227.

Synapta (GOODRICH, p. 234, fig. v), larval stages (p. 5, figg. iii, v, xvii); BATHER (19): key to French spp.; ACLOQUE (1) p. 465. *S. sp. indet.*; LUDWIG: spicules destroyed by formalin; HARTLAUB: in DOEDERLEIN (93) p. 230. *S. abyssicola*; PERRIER (264) p. 119. *S. digitata*, original drawings of dissections; GOODRICH in BATHER (19) p. 233, fig. v. *S. inhaerens*; ALLEN & TODD (7) p. 187 : habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 162. *S. lappa*; CONANT (71). +*S. oligocaenica*, n. sp., Upper Oligocene of Offenbach am Main, spicules contrasted with Mediterranean spp., *S. digitata*, *S. inhaerens*, *S. hispida* and compared with *S. kefersteini* and *S. albicans*; SPANDEL (313). *S. viridis*, Bermuda, habitat, colour; VERRILL (342) p. 587.

Synaptidae, diagnosis and discussion; GOODRICH in BATHER (19) p. 234 : alleged fossil representatives either sponge-spicules, or some other Hol. family; +SPANDEL (313).

Theelia; GOODRICH in BATHER (19) p. 230, fig. iv.

Thyon; GOODRICH in BATHER (19) p. 230, fig. iv : key to French spp.; ACLOQUE (1) p. 466. *T. fusus*; PERRIER (263) p. 301 : habitat, geogr.

and bathymetric distrib.; LUDWIG (209) p. 150. *T. gadeana*, n. sp. 106 metres, no locality given; PERRIER (263) p. 301. *T. raphanus*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 151.
Trochoderma; GOODRICH in BATHER (19) p. 234. *T. elegans*, habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 165.
Trochodota; GOODRICH in BATHER (19) p. 234. *T. dunedinensis*, spicules and locomotion; HORST (162).
Trochostoma; GOODRICH in BATHER (19) p. 233. *T. albicans* and *T. blakei*; PERRIER (264) p. 119. *T. boreale*; HARTLAUB (153) pp. 177, 190; KNIPOVICH (175) p. 458: LUDWIG in DOEDERLEIN (93) p. 230: habitat, geogr. and bathymetric distrib.; LUDWIG (209) p. 161.
Tutela echinata, vide *Elpidia glacialis*.

(C).—ECHINOIDEA.

General discussion of the Classification of *Ech.*, such main divisions as *Palechinoidae* and *Euechinoidae* (or *Nearechinidae*), as *Regularia* and *Irregularia*, and as Haeckel's based on external form of ambulacra (*Anthosticha* etc.), are rejected in favour of one based on presence or absence of jaws, viz. *Gnathostomata* and *Atelostomata*; the former further divided into *Plagiocysta*, *Endocysta*, and *Exocysta*, and *Endocysta* again into *Holostomata* and *Glyphotomata*, which names, latinised from Pomel, are preferred to Ludwig's *Abranchiata* and *Banchiata*, or Bell's *Endo-* and *Ecto-banchiata*; the sub-orders are in the main those of Zittel & Duncan, the classification of F. Bernard according to number of interambulacral columns (*Mono-*, *Poly-*, *Tetraplaca* etc.) being rejected; LAMBERT (187) pp. 4, 52 et seqq. General discussion of the Classification, rejection of *Palechinoidae* and *Euechinoidae*, and division into Sub-Class I. *Regularia Endobanchiata*, with Orders, *Bothriocidaroida*, *Cystocidaroida*, *Cidaroida*, *Melonitoida*, *Plesiocidaroida*; II. *Regularia Ectobanchiata*, with Order, *Diademoida*; III. *Irregularia*, with Orders, *Gnathostomata*, *Atelostomata*; GREGORY in BATHER (19) pp. 299–324: for sub-orders, families, etc., see alphabetical index.

Systematic value of intimate structure of spines; HESSE (159) p. 204.

Abatus; GREGORY in BATHER (19) p. 322.

Abranchiata, rejected (see general paragraph, supra); LAMBERT (187) p. 52.

Acanthechinus; GREGORY in BATHER (19) p. 309.

Acete; GREGORY in BATHER (19) p. 322.

†*Acrocidaris*; GREGORY in BATHER (19) p. 307. *A. formosa*; HUENE (166) p. 356. *A. nobilis*, microstructure of spine; HESSE (159) p. 219. *A. striata*; BENOIST (31) p. 3.

Acrocladinae Lamb., sub-tribe of *Polyporinae*; LAMBERT (187) p. 55.

†*Acroalenia*; GREGORY in BATHER (19) p. 306: distinguished fr. *Eodiadema* (p. 35), place in phylogeny (p. 49); LAMBERT (187). *A. decorata*; BENOIST (31) p. 3. *A. hemicidaroides*, microstructure of spine; HESSE (159) p. 218. *A. lamarcki*; BENOIST (31) p. 4. *A. pustulata*, microstructure of spine; HESSE (159) p. 218. *A. spinosa*, genotype, differences from more ancient species; LAMBERT (187) p. 36. *A. wiltoni*, microstructure of spine; HESSE (159) p. 218.

Acrouleniidae, diagnosis; GREGORY in BATHER (19) p. 306.

†*Actinophypha*; GREGORY in BATHER (19) p. 310.

†*Adelopneustes*; GREGORY in BATHER (19) p. 316.

Adetinae, section of *Spatangidae*; GREGORY in BATHER (19) p. 321.

†*Adelopneustes*; GREGORY in BATHER (19) p. 312.

Aerope; GREGORY in BATHER (19) p. 322.

- Agassizia*; GREGORY in BATHER (19) p. 322, fig. xxxix.
Alexandria, discussed; GREGORY in BATHER (19) p. 318.
Amblypneustes; GREGORY in BATHER (19) p. 313. *A. pallidus*, micro-structure of spine; HESSE (159) pp. 239, 243.
 †*Amblypygus*; GREGORY in BATHER (19) p. 320.
Amphidetus vide *Echinocardium*.
Amphipneustes lorioli n. g. et sp. allied to *Palaeopneustes*, 'Belgica' expedition; KOEHLER (180) p. 817.
 †*Ananchites* seu *Ananchites*, vide *Echinocorys*.
 †*Anaulocidaris*; GREGORY in BATHER (19) p. 314: a Mesozoic Perischo-echinoid?; LAMBERT (187) p. 39.
Anochanus; GREGORY in BATHER (19) p. 320.
Anomalanthus; GREGORY in BATHER (19) p. 318.
 †*Anthropygus*; GREGORY in BATHER (19) p. 320. *A. michelini*; CHOUFFAT (61) & (62) pp. 159, 193, is a limestone form, p. 199. *A. orbicularis*; CHOUFFAT (61) & (62) pp. 159, 163, 172, 193, is a marl form, p. 199.
Anthosticha and congruous terms of Haeckel criticised (see general paragraph, supra); LAMBERT (187) p. 52.
Arachninae subfam. of *Scutellidae*; LAMBERT (187) p. 55.
Arachnopleurus, incl. *Radiocyphus*; GREGORY in BATHER (19) p. 312.
Arachnoidea, discussed; GREGORY in BATHER (19) p. 318: key to French spp.; ACLOQUE (1) p. 464. *A. placenta*; BEDFORD (25) p. 285.
Arachnoidinae, diagnosis; GREGORY in BATHER (19) p. 318.
Arbacia; op. cit. p. 308, fig. xxi. *A. sp.*; LOEB (199), MATHEWS (226), MORGAN (235), VERNON (337), see II, F, viii. *A. sp.* "the black sea-urchin" of Eastern U. S., original photograph; DAVENPORT (80) fig. 186. *A. alternans*, literature (p. 7), *A. dufresnei*, confusion with *A. alternans*, measurements, colour in life, and number of anal plates in 10 examples, distribution (p. 5); MEISSNER (229). *A. nigra*, microstructure of spine; HESSE (159) pp. 238, 244, pl. xii. *A. punctulata*, breeding period; WILSON (355) p. 351: microstructure of spine; HESSE (159) pp. 238, 244. *A. pustulosa*, see II, F, viii; VERNON (337), VIGUIER (343), WINKLER (358): microstructure of spine; HESSE (159) pp. 238, 244. *A. spatuligera* ditto; locc. citt.
Arbaciadinae, n. subfam. of *Echinometridae*, this form preferred to *Arbaciinae* because there exists a genus *Arbacina* [why not *Arbaciinae*?]; LAMBERT (187) p. 54.
Arbaciidae, diagnosis; GREGORY in BATHER (19) p. 307.
Arbacina, Subord. nov. of *Diademoidea*, diagnosis, divided into Famm. *Hemicidaridæ*, *Arbaciidae*; GREGORY in BATHER (19) p. 307: name liable to confusion with Pomel's genus *Arbacina*; LAMBERT in Review.
 †*Arbacina monilis*, or *Psammechinus monilis* Vinassa; AIRAGHI (4) p. 70: not *A. monilis* Desmarest; LAMBERT in Review.
 †*Archaeocidaridae*, diagnosis; GREGORY in BATHER (19) p. 301.
 †*Archaeocidaris*; GREGORY in BATHER (19) p. 302, fig. xvi: either a syn. of *Echinocr.* (q. v.), or may be restr. to spp. with smooth scrobicules, e.g. *A. biangulata*, *A. megastylus*, *A. norwoodi*, *A. rossica*, *A. trautscholdi*, and *A. wortheni* Hall (as genotype), in which sense it precedes *Cidarotropus* Pomel [but cannot be accepted since it excludes the undoubtedly genotype *Cidaris urei*]; LAMBERT (187) p. 42. *A. sp.*; PEACH (260) p. 223. *A. sp.*; PROSSER (272) pp. 5, 6, 7, 153, 157. *A. agassizi*, Upper Coal Measures, Topeka, spines and plates only (p. 48, pl. viii); *A. megastylus*, spines (p. 49, pl. viii); BEEDE (29). *A. munsteri* vide sub *Eocidaris*. *A. rossica*; LAMBERT (187) p. 38: microstructure of spine; HESSE (159) p. 213. *A. trudifer*, Topeka limest.; BEEDE (29) p. 47, pl. viii. *A. urei*; PEACH (259) p. 65, and (260) p. 223. *A. verneuili* vide sub *Permocidaris*.

- [†]*Archaeodiadema* Greg.; GREGORY in BATHER (19) p. 308: syn. of *Hemipedina*; LAMBERT (187) p. 30.
- [†]*Archaeopneustes*; GREGORY in BATHER (19) p. 321.
- [†]*Archicacia*; loc. cit. *A. delgadoi*; CHOFFAT (62) pp. 155, 159, 163, 193.
- Argopatagus*; GREGORY in BATHER (19) p. 323.
- Aspidodiadema* referred to *Orthopsidae*; GREGORY in BATHER (19) p. 308, fig. xxii; this astonishes LAMBERT in Review.
- Asternata*, Subord. of *Atelostomata*, diagnosis, divided into Famm. *Echinoidae*, *Nucleolitidae*, and *Cassidulidae*; GREGORY in BATHER (19) p. 320.
- [†]*Asterocidaris* Cott., maintained as subgenus of *Gymnocidaris*, with genotype *A. nodoti*, comprises also *Hemicidaris granulosa* Wr. and *Pseudocidaris peroni* Cott.; LAMBERT (186) p. 483. *A. granulosa*; BENOIST (31) p. 4: variation in ornament of apex, structure of ambulacrals, specimens from l'Indre form a var. nov. *benoisti*; certain specimens figd. in Echinol. Helvet. and by Duncan are not this sp.; LAMBERT (186) p. 484, pl. viii. *A. minor*; BENOIST (31) p. 3: is a *Gymnocidaris*; LAMBERT (186) p. 483.
- [†]*Asteropeis*; GREGORY in BATHER (19) p. 309.
- [†]*Asterostoma*; GREGORY in BATHER (19) p. 321.
- Asthenosoma*; GREGORY in BATHER (19) p. 311, figg. x, xxix, xxx. *A. sp.*; CHUN (63) p. 495. *A. heteractis* n. sp., 5 fms. near Singapore, loops of gut, section of radius showing a deeper nerve system; BEDFORD (25) p. 278, pl. xxi. *A. hystriz*, muscles; STEWART (318) p. 89.
- Astrylypeus*; GREGORY in BATHER (19) p. 317.
- Autopyga*; GREGORY in BATHER (19) p. 310.
- Atelostomata*, Order, diagnosis, discussion, divided into Sub-orders *Asternata* and *Sternata*; GREGORY in BATHER (19) p. 318.
- [†]*Australanthus*; GREGORY in BATHER (19) p. 321.
- [†]*Baueria* placed in *Salenidae*; GREGORY in BATHER (19) p. 306: surprising action; LAMBERT in Review.
- Boletia*; GREGORY in BATHER (19) p. 313.
- [†]*Bothriocidaris*, descr.: *B. pahleni*; GREGORY in BATHER (19) p. 300, fig. xiv [adapted from Schmidt, here and in the description is a confusion of tubercles with pores, see PYCRAFT in Review].
- [†]*Bothriocidaroida*, Order, diagnosis, no family mentioned; loc. cit.
- [†]*Bothriolampa abundans*; FOURTAU (116) p. 481.
- [†]*Botriopygus*; GREGORY in BATHER (19) p. 320.
- Branchiata*, rejected (see general paragraph, supra); LAMBERT (187) p. 52.
- [†]*Breynella*; GREGORY in BATHER (19) p. 321.
- Breynia*; GREGORY in BATHER (19) p. 323. [†]*B. vicentina*; OPPENHEIM (251) p. 114.
- [†]*Brissomorpha fuchsii*, microstructure of spine; HESSE (159) p. 260, text-fig.
- [†]*Brissopatagus*; GREGORY in BATHER (19) p. 323.
- Brissopsis*; GREGORY in BATHER (19) p. 322, fig. xlvi: discussed; SCHLUETER (299) p. 361: key to French spp.; ACLOQUE (1) p. 464.
- [†]*B. brevistella* and [†]*B. cretacea*, vide sub *Diplodetes*. [†]*B. lamberti*, n. sp., Mid. Eocene, Ghizeh, type in coll. Lambert; GAUTHIER in FOURTAU (115) p. 42, pl. iii. *B. lyrifera*; CHUN (63) p. 158; [†]AIRAGHI (4) p. 72. [†]*B. minor*, vide sub *Plesiaster*. [†]*B. ottangensis*; MARIANI (224).
- Brissus*; GREGORY in BATHER (19) p. 323. *B. sp.* Diego Garcia; CHUN (63) p. 415. [†]*B. sp.* microstructure of spine; HESSE (159) p. 259. *B. carinatus* Gm. (= *latecarinatus* Leske) incl. *B. unicolor* Al. Ag. non Klein, distrib., measurements; BEDFORD (25) p. 287: Andaman Is.; ANDERSON (11) p. 13: microstructure of spine; HESSE (159) p. 259.
- [†]*B. oblongus*; AIRAGHI (4) p. 73.

- Calycina*, Subord. of *Diademoidea*, diagnosis, divided into Famm. *Saleniidae*
Acrosoleniidae; GREGORY in BATHER (19) p. 306.
Calyomne; GREGORY in BATHER (19) p. 321.
[†]*Caratomus*; GREGORY in BATHER (19) p. 320. *C. faba* et var. *trigonopygus*; KILIAN & LORY (170) p. 61.
[†]*Cardiaster*; GREGORY in BATHER (19) p. 321. *C. sp.* nondescr.; DIBLA (92) p. 494. *C. ananchytis*; BRYDONE (51) p. 12: incl. *Spatangus granulosus* Hag.; DECKE (82) pp. 55, 71: as zonal fossil; ROW (288) p. 313. *C. cf. arnaudi*; SCHLUETER (297) p. 419. *C. concavus* Catullo sp., redescr. and distinguished fr. *C. maximus*; SCHLUETER (299) p. 375. *C. granulosus*; CHOFFAT (62) pp. 172, 193. *C. heber* vide *C. maximus*. *C. maximus* redescr. fr. Meudon Chalk, in *Stegaster fauki* and *C. lehmanni* of Stolley as crushed examples, al. *C. heberti* Cott. nom. nud., which last incl. *Holaster cordiformis* SORIGNY non Woodward; SCHLUETER (298) p. 373, pls. xvii, xvi. *C. perezii* Wright (Brit. Cret. Ech. pl. lxviii, fig. 2) perhaps not san as *Holaster perezii* SISM.; LORIOL (207) p. 60. *C. pilula*, vide *sub Offaster*. *C. seu Scagliaster pseudoitalicus*, redescr., compared wi *C. italicus* [vide sub *Stegaster*]; SIMIONESCU (306) p. 37, pl. iii. *pygmaeus*, as zonal fossil; ROWE (288) pp. 318, 319.
[†]*Cardiolampas* (*Dysaster*) *ovulum*; KILIAN & LORY (170) pp. 15, 50, 52.
Cassidulidae, diagnosis, divided into Subfamm. *Clypeiniae*, *Cassidulinae*, *Catopyginiae*, *Echinolampiniae*, and *Eolampiniae*; GREGORY in BATHER (19) p. 321.
Cassidulinae: loc. cit.
[†]*Cassidulus*; loc. cit. *C. florealis*; CLARK (66) p. 335. *C. lusitanicus*; CHOFFAT (62) pp. 172, 193. *C. romani*, n. sp., Lower Eocene, Geb. Haridi, Egypt, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTA (115) p. 34, pl. ii. *C. subquadratus*; HOLMES (160) p. 129.
Catopyginae; GREGORY in BATHER (19) p. 321.
[†]*Catopygus*; loc. cit. and fig. xvi. *C. albensis*, compared with *C. curinatus*; PETRACZEK (265) p. 35. *C. cylindricus*; KILIAN & LORY (170) p. 6. *C. pusillus*; CLARK (66) p. 335. *C. rouvillei*, n. sp., Vraconnian sea Uzes, type in coll. F. Leenhardt at Montauban; LORIOL (207) p. 6, pl. vi.
Centrostephanus; GREGORY in BATHER (19) p. 309. *C. rodgersi*, microstructure of spine; HESSE (159) p. 249, text-fig. iv.
Chondrocidaris; GREGORY in BATHER (19) p. 302.
Cidaridae, diagnosis; loc. cit.: divided into 4 Sub-famm. *Streptocidarinae*, *Stereocidarinae*, *Tetracidarinae*, *Orthocidarinae*; LAMBERT (187) p. 53. *Cidaris* descr.; GREGORY in BATHER (19) p. 302, figg. xiii, xvi, xvii. [†]6 sp.; KILIAN & LORY (170) p. 60. [†]*C. sp.*; STILLE (319) p. 13. [†]6 sp. indet.; SCHLUETER (297) p. 420. [†]*C.*, n. f., spine; BETTONI (34) p. 10. [†]*C. admeto* MüNST, syn. of *Eodiadema regularis*; LAMBERT (187) p. 32. [†]*C. admeto* QUENST, partim *Mesodiadema* (q.v.), partim *Cidaris* aff. *biagora*; LAMBERT (187) p. 32. [†]*C. alata*; BROILI (48) p. 369; O. GORDON (132) p. 339, and (249) p. 309; ZITTEL (368) p. 349; microstructure of spine; HESSE (159) p. 230. [†]*C. amalthea* vide *Miocidaris*. [†]*C. angulata*, microstructure of spine; HESSE (159) p. 219. [†]*C. antarctica*, n. sp., Lower Miocene, S. Patagonia, spine and plates from various locc.; ORTMANN (255) p. 369. [†]*C. aspera*, microstructure of spine; HESSE (159) p. 215. [†]*C. avenionensis* DEPÉRET (89) p. 402; DOUXAMI (95) p. 420; microstructure of spine HESSE (159) p. 223. [†]*C. bathonica*; BENOIST (31) p. 3. [†]*C. baugeyi* GROSSOUBRE (145) p. 59. [†]*C. biformis*, microstructure of spine HESSE (159) p. 227. [†]*C. blumenbachii*; HUENE (166) pp. 352, 353. 362; microstructure of spine; HESSE (159) p. 215. [†]*C. bradfordensis* ditto; loc. cit. [†]*C. brauni*; BROILI (48) p. 369; O. GORDON (132) p. 340.

and (249) p. 309: KOSSMAT (184) p. 90: (incl. *C. catenifera* and *C. waechteri*), microstructure of spine; HESSE (159) p. 229. †*C. buchi*; BROILI (48) p. 369: ZITTEL (368) p. 350: microstructure of spine; HESSE (159) p. 230. †*C. [o]aerius* Quenst. referred to *Periocidaris*; LAMBERT (187) p. 39. *C. canaliculata*, is a *Dorocidaris* not a *Goniocidaris*, measurements of 13 examples, colour in life, distrib.; MEISSNER (929) p. 3. †*C. caryophyllia*; DEL BUE (87) p. 122. †*C. cenanomanensis*; CHOIFFAT (62) pp. 155, 192. †*C. cervicalis*; HUENE (166) p. 351: microstructure of spine; HESSE (159) p. 215. †*C. cervicornis*; OPPENHEIM (251) p. 82. †*C. clavigera*; DIBLEY (92) p. 493: DEECKE (82) p. 71: STRAHAN (322): as zonal fossil; ROWE (288) pp. 304, 326: microstructure of spine; HESSE (159) p. 219. †*C. crinifera*, ditto (p. 234). †*C. conoidea*, ditto (p. 233); HESSE (159). †*C. cornifera*; KILIAN & LORY (170) pp. 53, 56. †*C. coronata*, microstructure of spine; HESSE (159) p. 216. †*C. courtaudiana*; TOBLER (328) p. 291. †*C. criniferus* vide sub *Mesodiadema*. †*C. cydonifera*; KILIAN & LORY (170) p. 52. †*C. decorata*; BROILI (48) p. 369: O. GORDON (132) p. 340, and (249) p. 309: KOSSMAT (184) p. 90: spines; SOEHLE (311) p. 2: microstructure of spine; HESSE (159) p. 230. †*C. edwardsi* and †*C. elegans*, ditto; HESSE (159) p. 216. †*C. erbaensis*, Mte Domaro; BETTONI (34) p. 9, pl. i. †*C. farringtonensis*, microstructure of spine (p. 235), †*C. fayasi*, ditto (p. 219); HESSE (159). †*C. figueirensis*; CHOIFFAT (62) pp. 163, 172, 192. †*C. filigrana*, microstructure of spine; HESSE (159) p. 216. †*C. aff. filigrana*; HUENE (166) p. 352. †*C. "Cydaris [sic] filigranoides* (Mgh.) forma inedita, descritta in un autografo del Meneghini che io conservo," Sinemurian, Central Appenines; MORENA (233) p. 186. †*C. flexuosa*; O. GORDON (132) p. 340, and (249) p. 309: (incl. *C. brandis*, *C. mayeri*, *C. cingulata*), microstructure of spine; HESSE (159) p. 231, text-fig. †*C. florigemma*; HUENE (166) pp. 355, 356, 362, 364, 365: KOBY (177) p. 209: STILLE (319) p. 17: microstructure of spine; HESSE (159) p. 216. †*C. fustis*; BROILI (48) p. 369: microstructure of spine; HESSE (159) p. 231. †*C. gingensis*; STRUEBIN (324) pp. 335, 337. †*C. glandifera*; KILIAN & LORY (170) pp. 15, 33: POPOVICI-HATZEG (269) p. 550: microstructure of spine; HESSE (159). †*C. grandaeva*, microstructure of spine; HESSE (159) p. 214: vide etiam sub *Eotiaris*. †*C. grossularites*, microstructure of spine; HESSE (159) p. 234. †*C. guerangeri*; BENOIST (31) p. 3. †*C. guiaensis*; CHOIFFAT (62) p. 184. †*C. hagenowi* and †*C. hardouini*, microstructure of spine; HESSE (159) p. 220. †*C. hausmanni*; BROILI (48) p. 369: O. GORDON (132) p. 340, and (249) p. 309: microstructure of spine; HESSE (159) p. 228, text-fig. †*C. heteracantha*, KILIAN & LORY (170) pp. 56, 57. †*C. hirudo*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 304, 318, 324: microstructure of spine; HESSE (159) p. 220. †*C. ilminsterensis*, vide sub *Plegiocidaris*. †*C. impressa*, n. sp., Toarcian (couches à *Leptaena*) May, Calvados; LAMBERT (187) p. 47, pl. i. †*C. interlineata*; OPPENHEIM (251) p. 81: microstructure of spine; HESSE (159) p. 223. †*C. itya*, discussed and retained in the genus; LAMBERT (187) p. 40, pl. i. †*C. cf. jullieni*; BLAYAC (39). †*C. junqueiroensis*; CHOIFFAT (62) p. 185. †*C. keyserlingi*, vide *Eotiaris*. †*C. klapatekii*; BROILI (48) p. 369. †*C. koehlini*; TOBLER (328) p. 301. †*C. aff. lardyi*; CHOIFFAT (62) p. 228. †*C. leenhardtii*, n. sp., based on spines, A** in coll. F. Leenhardt at Montauk

l'hardyi; KILIAN & LORY (170) p. 52. +*C. liggora*; O. GORDON (132) p. 340, and (249) p. 309: vide etiam *Triadiocidaris*. +*C. lineolata*; KILIAN & LORY (170) p. 50. +*C. lingualis*, microstructure of spine; HESSE (159) p. 220. +*C. ludovici*, referred to *Polycidaris*; BETTONI (34) p. 11. +*C. malum* (p. 184), +*C. mamarozensis* (pp. 172, 192), +*C. maresi* (p. 184); CHOFFAT (62). +*C. marginata*; KILIAN & LORY (170) p. 33: microstructure of spine; HESSE (159) p. 217. +*C. martini*, vide sub *Plegiocidaris*. +*C. matheyi*; LORIOL (206) p. 182. +*C. meandrina*; BENOIST (31) pp. 3, 4: spine, now first found in N. France; LAMBERT (186) p. 475. +*C. meridanaensis*; KILIAN & LORY (170) p. 50. *C. metularia*; ANDERSON (11) p. 16: microstructure of spine; HESSE (159) p. 225. +*C. merithoeirensis*; CHOFFAT (62) p. 184. +*C. moorei*, vide sub *Plegiocidaris*. +*C. morierei*, at May, horizon discussed; LAMBERT (187) p. 48. +*C. muensteri*, microstructure of spine; HESSE (159) p. 224. +*C. muensteri* Meli 1880, non Sism., referred to *Dorocidaris papillata*; MELI (230) p. 332. +*C. multimammata*, microstructure of spine; HESSE (159) p. 225. +*C. muricata*; BAUMBERGER & MOULIN (23) p. 171: CHOFFAT (62) p. 184: KILIAN & LORY (170) pp. 50, 52: microstructure of spine; HESSE (159) p. 220. +*C. oligocena*, ditto; HESSE (159) p. 224. +*C. olifex*, vide sub *Mesodiadema*. +*C. oosteri*; OPPENHEIM (251) p. 81: microstructure of spine; HESSE (159) p. 224. +*C. oppeli*; LORIOL (206) p. 182. +*C. parastadifera*; O. GORDON (132) p. 339, and (249) p. 309. +*C. perornata*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) p. 304. +*C. cf. perornata*, microstructure of spine; HESSE (159) p. 220. +*C. pistillum*; DEECKE (82) p. 71: microstructure of spine; HESSE (159) p. 220. +*C. cf. pretiosa*; CHOFFAT (62) p. 184. +*C. propinqua*; HUENE (166) pp. 351, 359, 365: KILIAN & LORY (170) p. 15: microstructure of spine; HESSE (159) p. 217. +*C. pseudopistillum*, ditto; HESSE (159) p. 221. +*C. psilonotii*; ENGEL (106) p. 240: STILLE (319) p. 7. +*C. punctata*, microstructure of spine; HESSE (159) p. 235. +*C. punctatissima*; KILIAN & LORY (170) pp. 47, 52: POPOVICI-HATZEG (269) p. 550: microstructure of spine; HESSE (159) p. 221. +*C. pustulosa*; KILIAN & LORY (170) p. 52. +*C. pyrifera* [sic] (p. 234), and +*C. pyrenaica* (p. 221), microstructure of spine; HESSE (159). +*C. regularis* is not a *Hypodiadema*, however that genus be interpreted, but is an *Eodiadema*; LAMBERT (187) p. 34. +*C. reussi*; ZELIZKO (364) p. 175: microstructure of spine; HESSE (159) p. 221. +*C. rhizacantha* [sic]; KILIAN & LORY (170) pp. 52, 53. +*C. roemerii*; BROILI (48) p. 369: (incl. *C. globifera* and *C. tyrolensis*), microstructure of spine; HESSE (159). +*C. rossica*, vide sub *Archaeocidaris*. +*C. rossii*, n. sp., Priabona beds of Castelli, E. of Possagno, type at Pavia University, compared with *C. sabaratensis*, *C. scampicci*, and *C. mezzanoa*; OPPENHEIM (251) p. 82, pl. xvii. +*C. sceptrifera*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) p. 304: microstructure of spine; HESSE (159) p. 221. +*C. cf. sceptrifera*; SCHLUETER (297) p. 419. *C. sceptrum*; REIS (278) pp. 44, 84. +*C. schwabenau*; KORNHUBER (183) p. 87: microstructure of spine; HESSE (159) p. 224. +*C. scrobiculata*, ditto; HESSE (159) p. 231. +*C. semicostata*; BROILI (48) p. 369: (incl. *C. klapsteini* and *C. perplexa*), microstructure of spine; HESSE (159) p. 231. +*C. serrifera*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 309, 313. +*C. similis* (incl. *C. baculifera*) (p. 227), and +*C. sorigneti* (p. 222), microstructure of spine; HESSE (159). +*C. spinigera*; KILIAN & LORY (170) p. 52: OPPENHEIM (251) p. 80: microstructure of spine; HESSE (159) pp. 222, 224. +*C. spinosa*; LORIOL (206) p. 182: microstructure of spine; HESSE (159) p. 217. +*C. spinulosa*, descr.; GREPPIN (138) p. 186. +*C. splendens*; CLARK (66) p. 339. +*C. subcoronata*; BROILI (48)

p. 369: ZITTEL (368) p. 349. †*C. submarginata*, microstructure of spine; HESSE (159) p. 217. †*C. subularis*; OPPENHEIM (251) p. 81. †*C. subvesiculosa*; DEECKE (82) pp. 43, 71, 90: SCHMIDT (301) p. cxviii. *C. (Stereocidaris) subvesiculosa* d'Orb.; GREGORY in BATHER (19) p. 303, f. xvii, not d'Orbigny's sp., but probably *Stereocidaris cretosa* Mantell; LAMBERT in Review [this was Cotteau's opinion, but Schlueter 1892 said Cotteau was incorrect, nevertheless this not *C. subvesiculosa*]. †*C. cf. subvesiculosa*; DEECKE (82) p. 55: spine; PETRACZEK (265) p. 36: microstructure of spine; HESSE (159) p. 222. †*C. thomasi*, n. sp., Cenomanian, beds with *Nelobites vibreyeanus*, Beharieh oasis, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 6, pl. i. *C. thourasii* [sic], microstructure of spine; HESSE (159) p. 226. *C. tiara*; ANDERSON (11) p. 7. *C. tribuloides*; CONANT (71); DUERDEN (100) p. 613, and (101) p. 620: †ALMERA (9) p. 760. †*C. trigona*; BROILI (48) p. 369: ZITTEL (368) p. 350: microstructure of spine; HESSE (159) p. 229. †*C. tuberculosa*, microstructure of spine; HESSE (159) p. 217. †*C. vesiculosa*; BRUNHUBER (50); CHOIFFAT (62) pp. 185, 228: WISNIOWSKI (359) p. 240: microstructure of spine; HESSE (159) p. 222. *C. ?vesiculosa*; BYRDONE (51) p. 12. †*C. cf. vesiculosa*; BLANCKENHORN (38) p. 25: CHOIFFAT (62) pp. 155, 192. †*C. walcotti*; CLARK (66) p. 339. †*C. wissmanni*; BROILI (48) p. 369: microstructure of spine; HESSE (159) p. 227. †*C. zschokkei*; TOBLER (328) p. 291.

Cidaroides, Order, diagnosis, divided into Famm. *Lepidocentridae*, *Archaeocidaridae*, *Cidaridae*, and *Diplocidaridae*; GREGORY in BATHER (19) p. 301.

†*Cidaropsis*; GREGORY in BATHER (19) p. 307: distinguished from *Hemipedina*; LAMBERT (187) p. 28.

†*Cidarotropus* Pomel, vide *Archaeocidararis*.

Cionobrissus; GREGORY in BATHER (19) p. 323. *C.?* sp. nondescr., Andaman Sea, 640 fms.; ANDERSON (11) p. 10.

†*Circopeltis*; GREGORY in BATHER (19) p. 307. *C. neocomiensis*; CHOIFFAT (62) p. 184.

†*Claviaster*; GREGORY in BATHER (19) p. 321. *C. cornutus*; BLANCKENHORN (36) p. 38.

†*Cleistechinus*; GREGORY in BATHER (19) p. 323.

Climacopidae [melius *Climacopidae*] n. subfam. of *Pedininae*; LAMBERT (187) p. 54.

†*Clypeanthus*; GREGORY in BATHER (19) p. 321.

Clypeaster; GREGORY in BATHER (19) p. 318, figg. v, xxxvi. *C. sp.*; ANDERSON (11) pp. 6, 7. *C. sp.* original photogr.; DAVENPORT (80) fig. 188. †*C. sp.*; COPPA (72) p. 35. †*C. acuminatus*; LOERENTHEY (204) p. 59. †*C. aegyptiacus*; DEPÉRET (89) p. 403: vide etiam *C. altus*. †*C. altus*; ROTH v. TELEGD (286) p. 95: perh. incl. *C. aegyptiacus*, characteristic of Helvetian, list of locc., Pliocene specimens belong to *C. plicenicus*; MELI (230) p. 337. †*C. breunigii*; OPPENHEIM (251) p. 92, pl. xv. †*C. cf. complanatus*; WOLFF (360). †*C. crassicostatus*; KORNHUBER (183) p. 87: LOERENTHEY (204) p. 61. †*C. duncanianus*, nom. nud. Miocene, Burma; NOETLING (244) p. 44. †*C. cf. gibbosus*; LOERENTHEY (204) p. 59. *C. humilis*, endoskeleton; STEWART (318): microstructure of spine; HESSE (159) p. 252. †*C. imperialis*, in GREGORY (112) Zool. Rec. 1890, "rappelle plutôt la forme de *C. olisiponensis* et *C. duchessini*"; LAMBERT in Review. †*C. isthmicus*; FOURTAU (115) p. 59. †*C. molitensis*; KORNHUBER (183) p. 87. †*C. cf. parvus*; ROTH v. TELEGD (286) p. 95. †*C. plicenicus* Seguenza, maintained and distinguished fr. *C. altus* Lam., list of locc.; MELI (230) p. 337. †*C. priacae* n. ^{Malma beds of} Romano near Bassano, type in coll.

- (251) p. 92, pl. v: specimen too poor to found a species on, and probably not a *Clypeaster* at all; LAMBERT in Review. +*C. pyramidalis*; LOERENTHEY (204) p. 61. *C. rotundus*, endoskeleton; STEWART (318). +*C. scillae*; ALMERA (9) p. 760. *C. scutiformis*, microstructure of spine; HESSE (159) p. 251, pl. xiii. +*C. cf. subdepressus*; WOLFF (360).
- Clypeastridae*, diagnosis, divided into subfamm. *Clypeastrinae* and *Arachnoidinae*; GREGORY in BATHER (19) p. 318.
- Clypeastrina*, Subord. of *Gnathostomata*, diagnosis, discussed and divided into Famm. *Fibulariidae*, *Laganidae*, *Scutellidae*, and *Clypeastridae*; GREGORY in BATHER (19) p. 316.
- Clypeastrinae*, diagnosis; GREGORY in BATHER (19) p. 318.
- Clypeastroida*, Subord. of *Exocysta*, comprises *Conoclypeidæ*, *Proscutidae*, *Clypeasteridae* and *Scutellidae*; LAMBERT (187) p. 55.
- Clypeinæ*; GREGORY in BATHER (19) p. 321.
- +*Clypeopygus*; loc. cit. *C. michelini*; KILIAN & LORY (170) p. 56.
- +*Clypeus*; GREGORY in BATHER (19) p. 321, fig. xi: place in phylogeny; LAMBERT (187) p. 48. *C. altus*; BENOIST (31) p. 3; MUEHLBERG (236) p. 315. *C. hugi*; MUEHLBERG (236) p. 320. *C. patella*; BENOIST (31) p. 6. *C. ploti*; BENOIST (31) p. 3; MUEHLBERG (236) pp. 310, 313. *C. sinuatus*; TOBLER (328) p. 303; WISNIOWSKI (359) p. 232.
- +*Codechinus*; GREGORY in BATHER (19) p. 310. *C. rotundus*; KILIAN & LORY (170) p. 56.
- +*Codiopsis*; GREGORY in BATHER (19) p. 309. *C. lorini*; CHOIFFAT (62) p. 184: var. *alpina*; KILIAN & LORY (170) p. 56.
- Coelopleurus*; GREGORY in BATHER (19) p. 308. +*C. cf. delboui*, compared with *C. equis* (= *coronalis*); OPPENHEIM (251) p. 85. *C. maillardii*; ANDERSON (11) p. 5.
- +*Coenodiadema* A. Ag., syn. of *Hemipedina*; LAMBERT (187) p. 30.
- +*Collyrites*; GREGORY in BATHER (19) p. 321: place in phylogeny; LAMBERT (187) p. 48. *C. analis*; BENOIST (31) pp. 3, 6. *C. bicordata*; HUENE (166) p. 363; KOBY (177) p. 209. *C. cf. bicordatus*; BLEICHER & MIEG (40). *C. friburgensis*, internal cast from Camporo, measured; MARIANI (222) p. 409. *C. gillieroni*; GREPPIN (138) p. 190. *C. jaccardi*; BAUMBERGER & MOULIN (23) p. 171. *C. cf. malbosi*; KILIAN & LORY (170) p. 15. *C. ovalis*; HUENE (166) pp. 350, 351; MUEHLBERG (236) pp. 320, 324; WISNIOWSKI (359) p. 232. *C. ovulum*; CHOIFFAT (62) p. 184. *C. ringens*; GREPPIN (138) p. 189. *C. cf. ringens*; MUEHLBERG (236) p. 324.
- +*Collyritidae*, diagnosis, discussed; GREGORY in BATHER (19) p. 321.
- Colobocentrotus*; GREGORY in BATHER (19) p. 313. *C. atratus*; loc. cit. fig. xxxiv; ANDREWS (13) p. 117: microstructure of spine; HESSE (159) pp. 239, 244.
- Conoclypeidæ*, diagnosis; GREGORY in BATHER (19) p. 316.
- +*Conoclypeus*; loc. cit. *C. ? sp.*, Eocene, Somaliland; GREGORY (136) p. 42. *C. conoideus*; REIS (278) pp. 25, 26, 28, 33, 44. *C. delanouei*; FOURTAU (116) p. 483, & (119): study of variations, apical system (fig. 1), periproct (fig. 2), var. *miltiformis* Greg. only individual variation; FOURTAU (117) pp. 51–55, & (118) p. 136. *C. pignatarii*, n. sp., Middle Miocene of Calabria, allied to *C. conoideus*, type in Coll. R. Liceo Visconti di Roma; AIRAGHI (3) p. 174, pl. i. *C. plagiosomus*; NELLI (240) p. 415: VERRI & ANGELIS D' OSSAT (339) p. 259.
- +*Conodorus cairolí*; CHOIFFAT (62) pp. 159, 163, 193.
- Conolampas*; GREGORY in BATHER (19) p. 321.
- +*Conulus*—*C. castaneus*; RIAZ (281) p. 769. *C. vulgaris*; PAQUIER (257) pp. 427, 430.
- +*Coptodiscus*; GREGORY in BATHER (19) p. 316.
- +*Coptophyma*; GREGORY in BATHER (19) p. 312.

- [†]*Coptosoma*; GREGORY in BATHER (19) p. 310. *C. alexandrii*; ALESSANDRI (6) p. 552. *C. blanggianum*; OPPENHEIM (251) p. 86. *C. ghizehense*, n. sp., Mid. Eocene, Ghizeh, type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. 31, pl. ii. *C. speciosum*; CLARK (66) p. 339. "C. therestense" Fer. and Gauth." Gregory is probably *C. abbatei*; FOURTAU (118) p. 137.
- Coptosominae* as tribal name replaces *Cyphoecominiae*; LAMBERT (187) p. 54.
- [†]*Coraster*; GREGORY in BATHER (19) pp. 321, 322.
- Cottalidia*; GREGORY in BATHER (19) p. 309. [†]*C. beneltiae*; CHOFFAT (62) pp. 150, 163, 185, 193.
- Cotteaudinae*, nov. sub-tribe of *Orthoporinae*; LAMBERT (187) p. 54.
- [†]*Craterolampas*; GREGORY in BATHER (19) p. 321.
- [†]*Crotoclypeus*, place in phylogeny; LAMBERT (187) p. 49.
- [†]*Cyclaster*; GREGORY in BATHER (19) p. 323: vide etiam sub *Prenaster carinatus*.
- Cyphosoma* Ag. 1838; GREGORY in BATHER (19) p. 310, fig. xxviii: non Mamerheim 1837, must yield to *Phymosoma* Haime 1853 non Shikey [i.e. Qfg.], for spp. vide sub *Phymosoma*; LAMBERT (187) p. 54.
- Cyphosomatidae*, diagnosis; GREGORY in BATHER (19) p. 310.
- Cyrtoma*, incl. *Stigmatopygus*, *C. posthumum*, n. sp., Lower Miocene, L. Pueyrredon, S. Patagonia; ORTMANN (255) p. 369.
- Cystechinus*; GREGORY in BATHER (19) p. 321.
- [†]*Cystocidaroida*, diagnosis, incl. Famm. *Palaeodiscidae* and *Echinocystidae*; GREGORY in BATHER (19) p. 300.
- Dendrasterinae*, n. subfam. of *Scutellidae*, with tribes *Scutulinae*, *Rotuliniae*, *Monophorinae*; LAMBERT (187) p. 55.
- Dermatodiadema indicum*, n. sp., 470 metres, S. Nias Channel, L. DOEDERLEIN photo, but no description; CHUN (63) p. 362.
- [†]*Desorella*; GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 49.
- Diadema*; GREGORY in BATHER (19) p. 309, fig. xiii: not descended fr. *Eodiadema*, but from a more ancient form; LAMBERT (187) p. 36.
- [†]*D.* sp., microstructure of spine; HESSE (159) p. 248. [†]*D. desori*; PROCHÁZKA (270) pp. 9, 19, 31: spines; PROCHÁZKA (271) pp. 20, 146: of Reuss is not a *Diadema* but based on a spine of *Echinus* type; HESSE (159) p. 250. [†]*D. inaequale* referred to *Loriola* (p. 49); [†]*D. meriani* Quenst. non Ag., referred doubtfully to *Diademopsis* (p. 21); [†]*D. ruppeli*, referred to *Orthopsis* (p. 29); LAMBERT (187). *D. saxatile*; ANDREWS (13) p. 117: habitat, distrib., colour; BEDFORD (25) p. 277. *D. setosum*; CONANT (71): anal tube, colour, irritation by spines; ANDERSON (11) pp. 13, 16: eye-spot; BATHER (19) p. 32, figg. xxv, xxvi: microstructure of spine; HESSE (159) p. 246, pl. xiii.
- Diadenatidae*, diagnosis; GREGORY in BATHER (19) p. 309: divided into sub-famn. *Diademiniae*, *Tiarinae*, *Pedininae*; LAMBERT (187) p. 53.
- Diademina*, Subord. of *Diademoida*, diagnosis, divided into famm. *Orthopidiae*, *Diadematidae*, *Diplopodiidae*, *Pedinidae*, *Cyphosomatidae*, *Echinothuridae*; GREGORY in BATHER (19) p. 308.
- Diademiniae*, n. sub-fam. of *Diadematidae*, with tribes *Astropyginiae* and *Aspidodadiademiniae*; LAMBERT (187) p. 53.
- Diademoida*, Order, diagnosis, divided into Sub-orders *Calyicina*, *Arbicina*, *Diademinia*, and *Echinina*; GREGORY in BATHER (19) p. 306.
- [†]*Diademopsis*; GREGORY in BATHER (19) p. 309: discussed, regarded as s. g. of *Hemipedina*, of which it contains the primitive forms, diagnosis, evolution of ambulacrals (pp. 6-11), place in phylogeny (p. 50); *D. aequituberculata*, n. sp., based on Cotteau 'Ech. de l'Yonne,' pl. i, ff. 4, 8, Hettangian of Vault-de-Lugny, near Valloux (n. 14 n. i); *D. bechei* (p. 11); *D. bonisentzi* is a var. of -

bowerbanki, maintained (p. 16): LAMBERT (187). *D. cunningtoni*, vide sub *Hemipedina*. *D. exigua* referred to *Palaeopedina minima* (q. v.) (p. 20); *D. gevreyi*, n. sp., zone of *Am. planorbis* at Aubenas, Ardèche, also in zone of *A. angulatus* (p. 19, pl. i); *D. globulus*, incl. *D. buccalis*, made type of *Palaeopedina* (q. v.) (p. 22): LAMBERT (187). *D. granulata*, vide sub *Hemipedina*. *D. heberti*, discussed and restricted, incl. *D. jauberti* as "mutation géographique, une simple Variété" (pp. 15, 20); *D. heeri*, maintained (p. 16); LAMBERT (187): microstructure of spine; HESSE (159) p. 250. *D. jauberti*, vide *D. heberti*. *D. laffoni*, rejected as insufficiently descr.; LAMBERT (187) p. 16. *D. meriani*, vide sub *Diadema*. *D. michelini*, discussed and restricted, the var. *minor* (Pal. franc. pl. 384, ff. 1, 6) belongs rather to *D. gevreyi* (p. 17); *D. micropora* from Rhaetic, with a var. from Hettangian, discussed (p. 14); *D. microtuberculata*, discussed and maintained, incl. small individuals slightly different from type (p. 20); *D. quenstedti*, rejected as insufficiently characterised (p. 17); *D. serialis*, redescr. and discussed, with *Varr. nov. depressa* (Desor, Synopsis, pl. xiv, ff. 12, 14) and *magnituberculata*, from zone of *Am. angulatus* in Ardèche (p. 12, pl. i); *D. tomenti*, maintained (p. 19); *D. varusensis*, maintained (p. 21): LAMBERT (187).

†*Dictyopleurus*; GREGORY in BATHER (19) p. 312.

Diplacida, rejected (see general paragraph supra); LAMBERT (187) p. 53.

Diplociduridae, diagnosis; GREGORY in BATHER (19) p. 303.

†*Diplocidaris*; GREGORY in BATHER (19) p. 303. *D. craniensis*; BENOIST (31) p. 4 [=] *D. crausiensis*, n. sp., allied to *D. gigantea*, Vesulian of St. Gaultier (Indre); LAMBERT (186) p. 476, pl. viii. *D. desori*, microstructure of spine; HESSE (159) p. 218. *D. geometrica* (p. 33), *D. gigantea* (p. 15); KILIAN & LORY (170).

†*Diplodetus*, n. g. of Prymnodesmian Spatangids, distinguished from *Plesiaster* (p. 364), with genotype *D. brevistella* Schlueter olim *Brisopsis* (p. 364), also *D. cretaceus* Schlueter olim *Briassopsis* (p. 366), and *D. (?) recklinghausenensis*, n. sp. (p. 368), all Senonian of Westphalia; SCHLUETER (299): genus criticised by LAMBERT in Review, pl. xv: vide etiam *Plesiaster*.

†*Diplopodia*; GREGORY in BATHER (19) p. 309, fig. xxvi. *D. brongniarti*; KILIAN & LORY (170) p. 60. *D. depauperata* (pp. 150, 185), *D. deshayesi* (pp. 155, 172, 185, 193); CHOUFFAT (62). *D. dubia*; KILIAN & LORY (170) p. 56. *D. lusitanica* (p. 185), *D. marticensis* (pp. 155, 163, 193); CHOUFFAT (62): BLANCKENHORN (36) p. 36. *D. variolaris*; CHOUFFAT (62) pp. 150, 155, 163, 172, 179, 185, 193.

†*Diplopodiidae*; GREGORY in BATHER (19) p. 309.

†*Diplotagma*; GREGORY in BATHER (19) p. 309.

Diplotheanthus, vide *Echinanthus*.

†*Dipneustes*; GREGORY in BATHER (19) p. 322.

Discocidaris; GREGORY in BATHER (19) p. 302.

†*Discoidea*; GREGORY in BATHER (19) p. 316, fig. xi. *D. conica*; KILIAN & LORY (170) p. 60: RIAZ (281) p. 769. *D. cylindrica*; DIBLEY (92) pp. 487, 492, 493: PAQUIER (257) p. 402. *D. dixoni*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 317, 318, 319, 324. *D. rotula*; KILIAN & LORY (170) p. 60. *D. subcuculus*, op. cit. pp. 57, 60: SOEHLE (311) pp. 41, 48: WISNIEWSKI (359) p. 240.

Discoidiidae, diagnosis; GREGORY in BATHER (19) p. 316.

†*Ditremaster*:—*D. mur*; FOURTAU (115) p. 39: OPPENHEIM (251) p. 107. *D. schweinfurthi*, vide sub *Hemiaster*.

Dorocidaris; GREGORY in BATHER (19) p. 302. *D. ulcocki*; ANDERSON (11) pp. 5, 7. †*D. blakei*; DEL BUE (87) p. 129. *D. elegans*, S. Nias Channel, text-fig.; CHUN (63) p. 362. *D. papillata*, see II, F, viii;

- VERNON (337): microstructure of spine; HESSE (159) p. 226: MELI (230) p. 332.
- +*Dysaster*; GREGORY in BATHER (19) p. 321, fig. xvi. *D. granulosus*; HUENE (166) p. 359. *D. loryi* (p. 33), *D. subelongatus* (pp. 50, 52); KILIAN & LORY (170).
- +*Echinanthus*, incl. *Diplotheconthus*; GREGORY in BATHER (19) p. 318. *E. bericus*, n. sp., Priabona beds of Brendola, type in coll. de Zigno, Padua (p. 96, pl. xxi), *E. bufo* (p. 96); OPPENHEIM (251). *E. camerunensis*; VERRI & ANGELIS D' OSSAT (339) p. 259. *E. curvieri*; REIS (278) pp. 37, 44. *E. placenta*; OPPENHEIM (251) p. 95. *E. aff. puechei*; REIS (278) p. 84. *E. scutella*, limits and distribution discussed (p. 93). *E. sopianus* (p. 95); OPPENHEIM (251).
- Echinarachnius*; GREGORY in BATHER (19) p. 317. *E. excentricus*, microstructure of spine; HESSE (159) p. 254, pl. xiii: probably = *Scutella striatula* Conrad 1857 non Serrea; + LAMBERT in Review of MERRIAM (175) Zool. Rec. 1899. + *E. juliensis*; HATCHER (154) pp. 101, 102. *E. parma*, original photogr.; DAVENPORT (80) fig. 187.
- Echinina*, Subord. of *Diademoidea*, diagnosis, divided into Famm. *Temnopleuridae*, *Triplechinidae*, *Strongylocentrotidae*, *Echinometridae*, evolution discussed; GREGORY in BATHER (19) p. 311.
- Echininae* sub-fam. of *Echinometridae*, divided into tribes *Ortho*, *Oligo*, and *Poly-porinae* (qq. v.); LAMBERT (187) p. 54.
- +*Echinobrissus*, vide etiam *Nucleolites*: — *E. clunicularis*; BENOIST (31) p. 3: MUEHLBERG (236) pp. 315, 320. *E. goldfussi* seu *micraulus*; BENOIST (31) p. 6. *E. aff. parallelus*; CHOUFFAT (62) pp. 179, 193. *E. perroni* [sic]; GLANGEAUD (131). *E. roberti*; KILIAN & LORY (170) pp. 53, 56. *E. acutula*; DEECKE (82) p. 25. *E. waltheri*, n. sp., Santonian of Berak el Gazal, Abou Roach, Egypt, distinguished from *Nucleolites*; GAUTHIER in FOURTAU (115) pp. 16, 21, pl. i: BLANCKENHORN (36) p. 39.
- Echinocardium* [incl. *Amphidetus*]; GREGORY in BATHER (19) p. 323: key to Belgian spp.; LAMEERE (186) p. 37: key to French spp.; ACLOQUE (1) p. 464. *E. cordatum*, habitat; ALLEN & TODD (7) p. 188: microstructure of spine; HESSE (159) p. 256, pl. xiii: (as *Amphidetus*), segmenting ovum; HAMMAR (149): see II, F, viii; VERNON (337), and GIARD (128) p. 762. + *E. saccot*, n. sp., Plaisancian of Gebel Chelloul, Egypt, type in Mus. Hist. Nat., Paris; FOURTAU (115) p. 62, pl. iv.
- Echinocidaris*; GREGORY in BATHER (19) p. 308: key to French spp.; ACLOQUE (1) p. 463. *E. nigra*, literature; MEISSNER (229) p. 7.
- +*Echinoconus* (vide etiam *Conulus*): — *E. cf. abbreviatus*; BRYDONE (51) p. 12. *E. castanea*; CHOUFFAT (62) pp. 155, 193: DIBLEY (92) p. 493: KILIAN & LORY (170) p. 60: as zonal fossil; ROWE (288) p. 318. *E. conicus*; PAQUIER (257) p. 427: DIBLEY (92) pp. 484, 488, 489, 493: as zonal fossil; ROWE (288) pp. 299, 303, 349. *E. globulus*, as zonal fossil; ROWE (288) p. 299. *E. magnificus*; FORTIN (113). *E. mixtus* (p. 60). *E. nucula* (pp. 57, 60); KILIAN & LORY (170). *E. subrotundus*; DIBLEY (92) pp. 486, 488, 490, 493: as zonal fossil; ROWE (288) pp. 318, 324. *E. vulgaris*; BRYDONE (51) p. 12: DEECKE (82) p. 71.
- Echinocorythidae*, diagnosis; GREGORY in BATHER (19) p. 321.
- +*Echinocrys*, incl. *Ananchytes*; l. c., and fig. xxxv. *E.* sp.; PAQUIER (257) p. 427. *E.* (et A.) *corculum*; LEBEDEW (192) p. 29. *E.* (et A.) *ovatus*; DEECKE (82) pp. 55, 71, 87, 90, 94: LEBEDEW (192) p. 29: REIS (279) p. 94: SCHLUETER (297) p. 419: microstructure of spine; HESSE (159) p. 261, text-fig.: var. *conicus*; DEECKE (82) p. 71: var. *perconicus*; DEECKE (82) p. 87. *E. semiglobulus*; GROSSEVOIRE (145) p. 59. *E.* (et A.) *striatus*; DEECKE (82) p. 42. *E.* (et A.) *sulcata*,

variation; GRÖNWALL (143) p. 68. *E. tenuituberculata*; GROSSOVR (145, p. 60). *E. et. A. vulgaris*; BYRDONE (51) p. 12; DIBLET (92 pp. 484, 489, 493; FORTIN (113); REIS (278) p. 18; SCHMIDT (301 p. cxviii); STRAHAN (322); as zonal fossil; ROWE (288) pp. 303, 305 var. *gibbus*, as zonal fossil; ROWE (288) pp. 308, 313, 338, 342; var. *pyramidalis*, as zonal fossil; ROWE (288) pp. 297, 303, 338, 349.

Echinocrepis, referred to both *Spatangidae* and *Poortalesiidae*; GREGORY in BATHER (19) pp. 321, 324.

†*Echinocrinus* Agassiz 1841 preferred to *Archaeocidarid* McCoy 1844 (q.v. with genotype *Cidaris wreii*, and to *Palaeocidarid* Desor 1846, with genotype *Cidaris nerei*; the name might be restricted to spp. which agree with the genotype in having radially striate scrobicules; LAMBERT (187) p. 42.

Echinocyaminac, n. sub-fam. of *Proscutidae*; LAMBERT (187) p. 55.

Echinocymus, discussed; GREGORY in BATHER (19) p. 316, fig. xxxvii key to Belgian spp.; LAMEERE (188) p. 36; key to French spp. ACLOQUE (1) p. 464. †*E. oratus*; LOERENTHET (204) p. 59. *E. pusillus*; LAMEERE (189) p. 21; †SCALIA (295) p. 9; ontogeny (p. 1 et seq., figs. vi, xiv, xv); skeletogeny (p. 28, fig. xxiv); BATHER (19) †AIRAGHI (4) p. 71; is a *Fibularia*; LAMBERT in Review: †var. *rotundata*, Pliocene to recent, Calabria; STEFANO (316). †*E. pyriformis* [sic]; OPPENHEIM (251) p. 90. †*E. aff. scutatus*; REIS (278) p. 25. †*E. siculus*; SCALIA (295) p. 9. †*E. studeri*; VERRI & ANGELI d'OSSAT (339) p. 259.

†*Echinocypus*; GREGORY in BATHER (19) p. 312.

†*Echinocystidae*, diagnosis; GREGORY in BATHER (19) p. 301.

†*Echinocystis*, discussed; GREGORY in BATHER (19) p. 301.

†*Echinodiadema*; GREGORY in BATHER (19) p. 309.

Echinodiscus; op. cit. p. 317. *E. biforis*, microstructure of spine HESSE (159) p. 253, pl. xiii. *E. lacus* blown ashore on Andamans ANDERSON (11) p. 11; incl. *Lophophora truncata* and possibly *E. biforis*, variations, measurements, habitat; BEDFORD (25) p. 285.

Echinolampus; GREGORY in BATHER (19) p. 321. †*E. spp.*, Priabon beds; OPPENHEIM (251) p. 105. †*E. amplius*; DEFÉRET (89) p. 402 FOURTAU (115) p. 59. †*E. angulatus*; VERRI & ANGELI d'OSSAT (339) p. 259. †*E. beaumonti* Ag. redescr. and now first figd., not *E. beaumonti* from Palares of Cotteau, compared with *E. politus* (p. 97 pl. x), †*E. blainvilliei* (p. 102, pl. ix); OPPENHEIM (251). †*E. cassellensis* Loriol, var. nov. *depressa*, Tongrian of Borniida basin AIRAGHI (5) p. 111. †*E. discoideus*; WOLFF (360). †*E. cf. ellipso-dalis*, horizon discussed; OPPENHEIM (251) p. 106. †*E. farafrahensis* n. sp., Lower Eocene, Farafra oasis, Egypt, holotype in Mus. Hist Nat. Paris; GAUTHIER in FOURTAU (115) p. 37, pl. ii. †*E. globulus* OPPENHEIM (251) p. 101; var. *minor*, considered as young of *E. globulus*, and identical with *Caratomus londinianus* Mayer-Eymar but is confined to Lower Eocene, whereas *E. globulus* is only at top of Mid. Eocene; FOURTAU (115) p. 36. †*E. hellei*; AIRAGHI (4) p. 72; should be *E. rangi*; LAMBERT in Review. †*E. hemisphaericus* ROMAN (285) p. 776; var. *linki*; ROTH v. TELEGD (286) p. 95. †*E. hydrocephalus*, n. sp., Priabona beds of Possagno, type at Univ Padua; OPPENHEIM (251) p. 103, pl. xvii. †*E. justinae*, n. sp. Priabona beds, type at Univ. Pavia, distinguished from *E. suessi* and *E. lepsiusti*; OPPENHEIM (251) p. 100, pl. xvii; this is a *Progono lampas*; LAMBERT in Review. †*E. laurillardii*, history of name specimens from Borniida referred to this by Airaghi (4, Zool. Rec 1899) are now regarded as a var. of *E. cassellensis* (q.v.); AIRAGHI (5). †*E. lepsiusti*, type in coll. Lepsius, corrections of his original figure (p. 101), †*E. matheroni*, horizon discussed (p. 106), †*E. monte*

vialensis, distinguished from *E. beaumonti* and *E. politus* (p. 99, pl. viii), †*E. ottellii* discussed (p. 105): OPPENHEIM (251). *E. oviformis*; ANDERSON (11) pp. 5, 7. †*E. plagiosomus*; ALESSANDRI (6) pp. 550–552. †*E. posterocrassus*; CLARK (64) p. 5. †*E. scutiformis*; ROMAN (285) passim. †*E. subafinis*, n. sp., Priabona beds of Possagno, type in coll. Oppenheim, compared with *E. affinis* and allies; OPPENHEIM (251) p. 104, pl. ix. †*E. subcylindricus*; REIS (278) p. 37. †*E. subquadратus* (p. 105), †*E. subsimilis* discussed (p. 106); OPPENHEIM (251). †*E. tumidopetalum*, not Miocene as Gregory was told by Geol. Surv. Egypt, but Eocene; FOURTAU (118) p. 137; BLANCKENHORN (37) p. 430. †*E. zignoi*, n. sp., Priabona beds of Lonigo, type at Univ. Padua; OPPENHEIM (251) p. 103, pl. ix.

Echinolampinae; GREGORY in BATHER (19) p. 321.

Echinometra; GREGORY in BATHER (19) p. 313, fig. xiii. *E. lucunter* (see II, D, iii); ANDREWS (13) p. 117: endoskeleton; STEWART (318): microstructure of spine; HESSE (159) p. 245. *E. subangularis*; CONANT (71); DUERDEN (101) p. 620: microstructure of spine; HESSE (159) p. 245.

Echinometridae, diagnosis; GREGORY in BATHER (19) p. 313: divided into sub-fam. *Phymosominae*, *Arbaciadinae*, and *Echininas*; LAMBERT (187) p. 54.

Echinoneidae, diagnosis; GREGORY in BATHER (19) p. 320.

Echinonëus; GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 49. †*E. artini*; DEPÉRET (89) p. 402. *E. cyclostomus*, colour; ANDERSON (11) p. 16.

†*Echinopedina*; GREGORY in BATHER (19) p. 310.

†*Echinopsis*; GREGORY in BATHER (19) p. 308: distinguished from *Hemipedina*; LAMBERT (187) p. 28. *E. sp.* nondescr.; REIS (278) p. 84.

†*Echinospatagus leymeriei*, vide *Taxaster collegni*.

Echinostrephus; GREGORY in BATHER (19) p. 313. *E. molare*, habitat; ANDERSON (11) p. 14.

Echinothrix; GREGORY in BATHER (19) p. 310. *E. sp.*, Diego Garcia; CHUN (63) p. 415. *E. calamarii*, anal tube, colour; ANDERSON (11) p. 13.

†*Echinothuria*; GREGORY in BATHER (19) p. 311.

Echinothuridae, diagnosis, divided into sub-fam. *Pelanechininas* and *Echinothurinae*; GREGORY in BATHER (19) p. 310.

Echinothurinae, diagnosis, origin discussed; l.c.

Echinus; GREGORY in BATHER (19) p. 313, figg. i–iv and vi–viii: key to Belgian spp.; LAMEERE (188) p. 35: key to French spp.; ACLOQUE (1) p. 463. *E. sp.* nondescr.; CHUN (63) p. 158. *E. acutus*, microstructure of spine; HESSE (159) p. 243: joints; STEWART (318) p. 53: see II, F, viii; VERNON (337). *E. angulosus*, microstructure of spine; HESSE (159) p. 243. †*E. ataxensis* and †*E. carinatus*; GROSBOUVRE (145) p. 65. *E. esculentus*; NORDGAARD (245) p. 8: see II, F, viii; DUBOIS (98): copper; DUBOIS (99): pigment; GRIFFITHS (141): host of Copepod; GIESBRECHT (129) p. 201: larvae; MACBRIDE (213, 215): muscles of lantern; STEWART (318) p. 89: microstructure of spine; HESSE (159) p. 240: descr. as typical *Ech.*; GREGORY in BATHER (19) p. 285 et seqq., figg. i, ii, vi: (incl. *E. sphaera*) distrib., habitat, general description of anatomy and life-history, so far as known, as that of a typical *Ech.*; CHADWICK (59) and CUÉNOT (75). *E. flemingi*; NORDGAARD (245) p. 8. †*E. heberti*; GROSBOUVRE (145) p. 65. *E. horridus*; MEISSNER (229) p. 9. *E. magellanicus*; KOEHLER (180) p. 815: measurements of extremes, distrib.; MEISSNER (229) p. 10. *E. margaritaceus*, measurements, distrib.; MEISSNER (229) p. 11. *E. melo*; †AIRAGHI (4) p. 69: microstructure of spine; HESSE (159) p. 243. *E. microtuberculatus*, host of Copepod; GIESBRECHT

- (129) p. 201: chromosomes and centrosomes; BOVERI (46) pp. 343-348, pl. xiii: see II, I, viii; VERNON (337), and HERBST (156). *E. militaris*; ALLEN & TODD (7) p. 188: segmenting ovum; HAMMAR (149): larvae; MACBRIDE (213, 215). *E. neumayeri*, n. sp., S. Georgia; MEISSNER (229) p. 12, text-fig. *E. norvegicus*, literature; MEISSNER (229) p. 11. †*E. puechi* and †*E. rassyacensis*; GROSSEVOIRE (145) p. 65. *E. sphaera*, observations on ova and spermatozoa; GEMMILL (125): vide etiam *E. esculentus*. *E. sphaeroides*, vide *Salmacis rarispina*. †*E. syriacus* Conrad, 9 cotypes found at Yale; BEECHER (26). †*E. woodsi*; CLARK (64) p. 5: (?) TATE (326) p. 111.
- Ectobranchiata*, rejected (see general paragraph supra); LAMBERT (187) p. 52.
- †*Enallaster*; GREGORY in BATHER (19) p. 321, fig. xvi. *E. criminensis*, *E. delgadoi*, *E. lepidus*, and *E. cf. oblongus*; CHOUFFAT (62) p. 185. *E. peroni*, n. sp., Lower Aptian, Algeria, distinguished from *Heteraster oblongus*, towards which however a var. passes; FICHEUR (109) p. 590, pl. x. *E. pomeli*, nom. nud.; FICHEUR (108) p. 573: n. sp., Lower Aptian, couches à *Plicatula placnea*, Matmatas and Oran, Algeria, distinguished from *Heteraster couloni*; FICHEUR (109) p. 592, pl. x. *E. texana*; VAUGHAN (336) pp. 16, 84.
- †*Enallopsneutes*; GREGORY in BATHER (19) p. 321.
- Encope*; GREGORY in BATHER (19) p. 317. †*E. chilensis*; MOERICKE (232) pp. 589, 609. *E. emarginata*, microstructure of spine; HESSE (159) p. 255.
- Endobranchiata*, rejected (see general paragraph supra); LAMBERT (187) p. 52.
- Endocysta*, order of Gnathostomata (see general paragraph supra); LAMBERT (187) p. 52.
- †*Endodiadema*, distinguished from *Eodiadema*; LAMBERT (187) p. 35.
- †*Enichaster*; GREGORY in BATHER (19) p. 321.
- †*Entomaster*; GREGORY in BATHER (19) p. 321.
- †*Eocidaris*, discussed and restricted (p. 38). *E. drydenensis*, possibly belongs to this genus (p. 39). *E. forbesi*, made type of *Periocidaris* (q.v.) (p. 39); LAMBERT (187). *E. keyserlingi*, microstructure of spine; HESSE (159) p. 213: vide etiam *Eotiaris*. *E. laevispina* maintained in genus (p. 38); *E. laubei*, n. sp. removed from *Cidaris laigora* (Laube, pl. ix, fig. 4a) and distinguished from *E. scrobiculata* (p. 39); LAMBERT (187). *E. muensteriana*, microstructure of spine; HESSE (159) p. 213. *E. munsteri*, provisionally retained in this genus (p. 39). *E. rossica* is an *Archaeocidaris* (p. 38). *E. scrobiculata* maintained in genus (p. 38); LAMBERT (187). *E. verneuili*, vide *Periocidaris*.
- †*Eodiadema*; GREGORY in BATHER (19) p. 308: diagnosis, = "Criniferen" of Quenstedt (p. 34); considered as the source of all *Glyphostomata* with crenelate tubercles (pp. 36, 50); includes following spp.:—*E. collenoti* Cott (sub *Pseudodiadema*), *E. granulatum* Duncan, genotype, *E. laqueatum* Quenst. (sub *Cidaris*), *E. lobatum* Wright (sub *Pseudodiadema*), *E. minutum* Buckm. (sub *Echinus*), *E. octocepis* Quenst. (sub *Cidaris*), *E. pusillum*, n. sp., Toarcian of May, near Caen (pl. i), *E. regulare* Münst. (sub *Cidaris*) (p. 35); *E. minutum*, peristome only slightly glyphostomate, approaching holostomate (p. 37, fig. 7); LAMBERT (187).
- Eodiademinæ*, nov., tribe of *Tiarinæ*; LAMBERT (187) p. 53.
- †*Eolampas*; GREGORY in BATHER (19) p. 321.
- Eolampinæ*; GREGORY in BATHER (19) p. 321.
- †*Eotiaris*, n. g. "le plus ancien représentant des *Cidaroida*," with genotype *Cidaris keyserlingi* Geinitz, relations to subsequent genera discussed (p. 40); *E. grandaevis* Quenst. (sub *Cidaris*) placed here provisionally (p. 40); *E. keyserlingi*, removed from *Eocidaris* (p. 38); LAMBERT (187).
- †*Epiaster*; GREGORY in BATHER (19) p. 321. *E. blayaci*, nom. nud.;

- FICHEUR (108) p. 573 : n. sp., Lower Aptian, couches à *Plicatula placunea*, Matmatas, Algeria ; FICHEUR (109) p. 595, pl. xi : referred, by implication, to *Hypsaster* ; LAMBERT in Review. *E.* cf. *crassissimus* ; LAMBERT in RIAZ (281) p. 770 : RADKEVICH (277) p. xxxvi. *E. distinctus*, probably var. of *E. crassissimus* ; LAMBERT in RIAZ (281) p. 770. *E. gibbus* ; DIBBLEY (92) p. 493 : as zonal fossil ; ROWE (288) pp. 303, 305. *E. hebeti* ; DE STEFANO (90) p. 32. *E. leenhardtii*, n. sp., Vraconnian near Uzès, type in coll. F. Leenhardt at Montauban ; LORIOL (207) p. 62, pl. vi. *E. pouyannei*, nom. nud. ; FICHEUR (108) p. 573 : n. sp., Lower Aptian, couches à *Plicatula placunea*, Matmatas, Algeria ; FICHEUR (109) p. 594, pl. xi : referred to *Hypsaster* ; LAMBERT in Review. *E. restrictus* ; BLAYAC (39) : FICHEUR (108) p. 572. *E. trigonalis* ; RIAZ (281) p. 769.
- Eucidaria*, sp., Diego Garcia ; CHUN (63) p. 415.
- Euechinoidea*, Sub-class, rejected (see general paragraph supra) ; GREGORY in BATHER (19) p. 299 : LAMBERT (187) p. 52.
- Eupatagus* ; GREGORY in BATHER (19) p. 323. *E.*, sp. ; ANDERSON (11) p. 7. +*E. tellinii*, vide *Euspatangus minutus*.
- +*Eurhodia* ; GREGORY in BATHER (19) p. 321.
- +*Euryptyneutes* ; GREGORY in BATHER (19) p. 313.
- +*Euspatangus* :—*E. bicarinatus*, redescr., incl. *E. elatus* and *E. cor* Mazzetti ; OPPENHEIM (251) p. 117, pl. xvii. *E. cairensis*, a mutation of *E. formosus*, and confined to Lutetian II ; FOURTAU (117) p. 57. “*E. cotteaui* Lor.” Gregory, in *Plesiospatangus* ; FOURTAU (118) p. 136. *E. formosus*, confined to Lutetian I ; FOURTAU (117) p. 56. *E. minutus*, redescr., incl. *E. pavayi* Koch, *Spatangus pantanellii*, *Hypsospatangus pentagonalis*, and *Eupatagus tellinii* Mazzetti ; OPPENHEIM (251) p. 116, pl. x. *E. ornatus*, horizon and distribution in S.E. Europe ; OPPENHEIM (250) p. 115 : horizon doubtful ; OPPENHEIM (251) p. 118. *E. peroni*, n. sp., Lower Eocene, Gebel Haridi, Egypt, type in Mus. Hist. Nat. Paris ; GAUTHIER in FOURTAU (115) p. 52, pl. iii. *E. tournoeuri*, redescr. ; OPPENHEIM (251) p. 115, pl. x. *E. vicinus*, n. sp., Lower Eocene, Gebel Abou el Fodah, near Mansalout, Egypt, type in Mus. Hist. Nat. Paris ; GAUTHIER in FOURTAU (115) p. 54, pl. iii.
- Evechinus* ; GREGORY in BATHER (19) p. 313.
- Exocysta* as Order of *Gnathostomata*, divided into Suborders *Pileatoida* and *Clypeastroida* ; LAMBERT (187) p. 55.
- Faorina* ; GREGORY in BATHER (19) p. 322.
- +*Faujasia* ; GREGORY in BATHER (19) p. 321.
- Fibularia* ; GREGORY in BATHER (19) p. 317. *F.*, sp. ; ANDERSON (11) p. 6. +*F. gregata* ; CLARK (64) p. 5 : TATE (326) p. 111.
- Fibulariidae*, diagnosis ; GREGORY in BATHER (19) p. 317.
- Fibulariniae*, subfam. of *Proscutidae* ; LAMBERT (187) p. 55.
- +*Gagaria*, vide *Orthechinus*.
- +*Galeaster* ; GREGORY in BATHER (19) p. 321.
- +*Galerites* ; GREGORY in BATHER (19) p. 316, fig. xxxv. *G. abbreviatus* ; DEECKE (82) pp. 55, 73. *G. albogaleritus*, *G. laevis*, and *G. subrotundus* ; WISNIOWSKI (359) p. 241. *G. vulgaris* incl. *G. abbreviatus* and *G. roemerii* ; DEECKE (82) pp. 55, 73, 87, 94.
- Galeritidae*, diagnosis ; GREGORY in BATHER (19) p. 316.
- Galeroclypeus* ; GREGORY in BATHER (19) p. 320.
- +*Galeropygus*, in *Pygasteridae* (p. 316), referred to *Echinoneidae* (p. 320) ; GREGORY in BATHER (19) : place in phylogeny ; LAMBERT (187) pp. 43, 48. *G.*, cf. *caudatus* ; MUEHLBERG (236) p. 302.
- +*Gaultieria* ; GREGORY in BATHER (19) p. 323.
- +*Gauthieria* ; GREGORY in BATHER (19) p. 310 : place in phylogeny ; LAMBERT (187) p. 49.

- Genioopatagus*, referred to *Spatangidæ adetinae*; GREGORY in BATHER (19) p. 321.
- †*Gibbaster*; GREGORY in BATHER (19) p. 323.
- Glyphocyphinas* DUNC., diagnosis; GREGORY in BATHER (19) p. 312: tribe of *Tiarinas*; LAMBERT (187) p. 53.
- †*Glyphocyphus*, incl. *Rhabdopleurus*; GREGORY in BATHER (19) p. 3. *G. radiatus*, as zonal fossil; ROWE (288) p. 318.
- †*Glyptechinus*; GREGORY in BATHER (19) p. 313.
- †*Glypticus*; GREGORY in BATHER (19) p. 307. *G. hieroglyphicus*; HUM (166) p. 356.
- Gnathostomata*, Order, diagnosis, divided into Suborders *Holothypinea* & *Cypeastrina*; GREGORY in BATHER (19) p. 315.
- Goniocidaris*; GREGORY in BATHER (19) p. 302. *G. canaliculata*, mic structure of spine; HESSE (159) p. 208, pl. xii. *G. mortenseni*, n. sp. 'Belgica' expedition; KOEHLER (180) p. 816. *G. tubaria*, mic structure of spine; HESSE (159) p. 226.
- †*Goniophorus*; GREGORY in BATHER (19) p. 306.
- Goniopneustes*; GREGORY in BATHER (19) p. 313.
- †*Goniopygus*; GREGORY in BATHER (19) p. 307. *G. cf. brossardi*; CHOU (63) pp. 172, 193. *G. delphinensis* (pp. 53, 56), *G. intricatus* (p. 1). *G. loryi* (p. 56); KILIAN & LORY (170). *G. major* (p. 172), *G. megalops* (pp. 155, 159, 163, 166, 172, 179, 193), *G. politus* (p. 184); CHOU (63).
- Grammachinus*; GREGORY in BATHER (19) p. 313.
- †*Grasia*; GREGORY in BATHER (19) p. 321. *G. elongata*; KILIAN & LORY (170) p. 33.
- †*Guettaria*; GREGORY in BATHER (19) p. 321.
- Gymnocidaris* A. AG. 1863 with genotype *Cidaris metularia* is not *Gymnocidaris* AG.; LAMBERT (186) p. 483.
- †*Gymnocidaris* AG. 1838, revived with genotype *G. diademata* AG. (*Hemicidaris*), and including *Hemipygus* as syn.; LAMBERT (186) p. 482. *G. coesmanni*, n. sp., Vesulian of St Gaultier (IND.). LAMBERT (186) p. 479, pl. viii: BENOIST (31) p. 4. *G. minor* and *pustulosa*; LAMBERT (186) p. 483.
- †*Gymnodiadema*; GREGORY in BATHER (19) p. 308.
- Gymnopatagus*, n. g. near *Eupatagus* with genotype *G. valdiviae*, n. sp. 1134 metres, Somali coast, figd. but not descr.; DOEDERLEIN in CH (63) p. 495.
- †*Hagenovia*; GREGORY in BATHER (19) p. 321.
- †*Haimea*; GREGORY in BATHER (19) p. 320.
- †*Hecistocyphus* POMEL, based on *Diademopsis serialis* var. *bonissenti* "suite d'une erreur d'observation"; LAMBERT (187) p. 20.
- †*Helicodiadema*; GREGORY in BATHER (19) p. 309.
- Helicidarinæ*, nov. sub-tribe of *Polyoporinæ*; LAMBERT (187) p. 55.
- Hemaster*; GREGORY in BATHER (19) p. 323, figg. xliv, xvii. *H. s. Koehler* (180) p. 815. †*H. sp.* indet.; SCHLUETER (297) p. 4.
- †*H. adonensis* (pp. 155, 193), †*H. alcantarensis* (pp. 155, 166, 193); CHOFFAT (62). †*H. archiaci*, vide sub *Trachyaster*. *H. tenuis*; BLANCKENHORN (36) table, p. 33: DE STEFANO (90) p. 1.
- †*H. bellaensis*; CHOFFAT (62) pp. 150, 155, 185, 193. †*H. blankhorni*, [sic], n. sp., Santonian of Berak el Gazal, Abou Roach, Egypt type in Mus. Hist. Nat. Paris; GAUTHIER in FOURTAU (115) p. pl. i. †*H. canavarii*; MARIANI (224). *H. cavernosus*, literat colour in life; MEISSNER (229) p. 13. †*H. cf. cenomanensis*, dwa CHOFFAT (62) p. 44. †*H. cubicus*; BLANCKENHORN (36) pp. 28, 30. †*H. delgadai*; CHOFFAT (62) pp. 150, 155, 163, 185, 193. †*H. fonscolombii*; FOURTAU (115) p. 13: vide etiam sub *Periaster roachensis*. aff. *fourneti*, Cenomanian of Abu Roasch (p. 34); BLANCKENHORN

(36). †*H.* n. sp. aff. *fourneti*; Santonian, ibid. (pp. 34, 39); BLANCKENHORN (36). †*H. lageensis* de Lor. in litt.; CHOIFFAT (62) p. 193. †*H. lorioli*, microstructure of spine; HESSE (159) p. 261. †*H. lusitanicus*; CHOIFFAT (62) pp. 150, 155, 185, 193: in Egypt, discussed; BLANCKENHORN (36) p. 34. †“*H.*, cf. *lusitanicus* de Lor.” of Blanckenhorn is *H. pseudo-fourneti* and is not to be confused with *Periaster roachensis*; FOURTAU (120) p. 630. †*H. minimus*; KILIAN & LORY (170) p. 61: as zonal fossil; ROWE (288) p. 317. †*H. palpebratus*; CHOIFFAT (62) pp. 155, 193. †*H. parastatus*; CLARK (66) p. 330. †*H. pseudo-fourneti*; FOURTAU (119) & (120) p. 630. †*H.*, cf. *nullus*; FRECH (124) p. 307. †*H. recklinghausenensis* referred to *Plesaster* = *Diplodetus*; SCHLUETER (297) p. 418. †“*H. schweinfurthi* Lor.” GREGORY, is *Ditremaster*; FOURTAU (118) p. 136. †*H. scutiger* (pp. 150, 155, 163, 172, 173, 179, 185, 193), dwarf (p. 44), †*H.*, cf. *similis* (pp. 159, 163, 193), †*H. subtilis* (p. 185), †*H.*, cf. *subtilis* (pp. 166, 173, 193), †*H. tumidous* (pp. 155, 172, 185, 193), †*H.*, cf. *tumidous* (p. 179); CHOIFFAT (62).

†*Hemicidaridae*, diagnosis; GREGORY in BATHER (19) p. 307.

†*Hemicidaris*; GREGORY in BATHER (19) p. 307, figg. xvi, xx: split into three genera, *Pseudocidaris*, *Gymnocidaris*, and *Hemicidaris* s. str. with genotype *H. crenularis*; LAMBERT (186) p. 482. *H. abyssinica*, var. *depressa*; ANGELIS D' OSSAT & MILLOSEVICH (16) p. 156. *H. agassizi*, restr. and maintained (p. 480), *H. cartieri*, distinguished from *H. agassizi* (p. 481) and is not a *Prodiadema* (p. 483); LAMBERT (186). *H. clunifera*; KILIAN & LORY (170) p. 53. *H. crenularis*, microstructure of spine; HESSE (159) p. 218. *H. diademata*, distinguished from *H. agassizi*, uncertainty owing to defective figures, nevertheless selected as type for the re-established *Gymnocidaris* L. Ag., previously without genotype indicated; LAMBERT (186) pp. 480–483. *H. granulosa* vide sub *Asterocidaris*. *H. hofmanni*; DEECKE (82) p. 24. *H. intermedia*; HUENE (166) pp. 355, 356, 364: microstructure of spine; HESSE (159) p. 218. *H. langrunensis*; BENOIST (31) p. 3: MUEHLBERG (236) p. 312: Cott., of type-locality, is young of *H. lucensis*; but *H. lorioli*, n. sp., is based on specimens from Bernese Jura descr. as *H. langrunensis* (Loriol, Echinol. Helvét. Jurass., pl. xiv, ff. 20–22); LAMBERT (186) p. 478. *H. luciensis*; BENOIST (31) p. 4: variations in the type-locality descr. and explained, incl. *H. langrunensis* as young; LAMBERT (186) p. 476. *H. purbeckensis*; GLANGEAUD (131). *H. pustulosa*; BENOIST (31) p. 5: vide etiam sub *Gymnocidaris*. *H. undulata*, microstructure of spine; HESSE (159) p. 219.

†*Hemipatagus*; GREGORY in BATHER (19) p. 321.

†*Hemipedina*; GREGORY in BATHER (19) p. 309: discussed, its relations to *Diademopsis* (p. 6), restr. and diagnosed, with genotype *H. etheridgei*; LAMBERT (187) p. 28. *H. aspera*, really comes from beds of *Stephanoceras humphriesi*; GREPPIN (138) p. 188. *H. bonei*, doubtfully referred to *Palaeopedina* (p. 27), *H. cunningtoni* Wright, referred doubtfully to *Diademopsis* (p. 21), *H. davisoni*, referred to *Orthopsis* (p. 29), *H. granulata* Merian, referred doubtfully to *Diademopsis* (p. 21): LAMBERT (187). *H. mairei*, n. sp., Bathonian near Belfort, type in coll. V. Maire at Gray; LORIOL (207) p. 66, pl. vii. *H. microgramma*, referred to *Orthopsis*; LAMBERT (187) p. 29. *H. perforata*; GREPPIN (138) p. 188. *H. saemannii*, referred to *Orthopsis*; LAMBERT (187) p. 29. Other spp. referred to s. g. *Diademopsis* (q.v.); LAMBERT (187).

†*Hemipneustes*; GREGORY in BATHER (19) p. 321. *H. striato-radiatus*, microstructure of spine; HESSE (159) p. 261.

†*Hemipygus* Etallon, syn. of *Gymnocidaris* Ag.; LAMBERT (186) p. 483.

- +*Hemitiaris* Pomel, syn. of *Hemicidaris* based on accidental fusions of plates arising in individual growth; LAMBERT (186) p. 478.
- +*Heteraster*:—*H. couloni*; FICHEUR (109) p. 593: KILIAN & LORY (170) pp. 53, 56. *H. oblongus*; FICHEUR (109) p. 591: KILIAN & LORY (170) pp. 53, 56.
- Heterocentrotus*; GREGORY & BATHER (19) p. 313, fig. xxxiii. *H. mammilatus*, joints; STEWART (318): (incl. *H. carinatus*), microstructure of spine; HESSE (159) pp. 239, 244. *H. trigonarius*, microstructure of spine; HESSE (159) pp. 239, 245.
- +*Heterocidaris*; GREGORY in BATHER (19) p. 309.
- +*Heteroclypeus*; op. cit. p. 321: Cotteau 1891, is syn. of *Hypoclypeus* Pomel 1869; LAMBERT in Review of AIRAGHI (3). *H. elegans*, n. sp., Miocene of Sardinia, allied to *H. semiglobus*, type in Mus. civico Milano (p. 176, pl. i); *H. nevianii*, n. sp., Middle Miocene of Calabria, allied to *H. subpentagonalis*, type in Coll. R. Liceo Visconti di Roma (p. 177, pl. i): AIRAGHI (3).
- +*Heterodiadema*; GREGORY in BATHER (19) p. 309: place in phylogeny; LAMBERT (187) p. 49. *H. libycum*; BLANCKENHORN (38) p. 36: CHOIFFAT (62) pp. 150, 155, 163, 172, 185, 193. *H. ouremense*; CHOIFFAT (62) pp. 150, 155, 185, 193.
- Heterognatha* Bernard rejected; LAMBERT (187) p. 55.
- +*Heterolampus*; GREGORY in BATHER (19) p. 321.
- +*Heterosolenia*; GREGORY in BATHER (19) p. 306.
- Hipponeüs*, vide etiam *Tripneustes*. *H. esculenta*; CONANT (71): DUERDEN (101) p. 620: microstructure of spine; HESSE (159) p. 245. *H. variegata* ditto, loc. cit.
- +*Holaster*; GREGORY in BATHER (19) p. 321. *H. carinatus*; RADKEVICH (277) p. xxxvi. *H. cf. carinatus*; BLANCKENHORN (38) p. 25. *H. cordatus*; KILIAN & LORY (170) p. 50. *H. cordiformis* Sorig., vide sub *Cardiaster maximus*. *H. intermedius*; KILIAN & LORY (170) p. 50. *H. laevis*; op. cit. p. 61: RIAZ (281) p. 769. *H. olivalensis* de Lor. in litt.; CHOIFFAT (62) pp. 159, 193. *H. perezi*; KILIAN & LORY (170) p. 57: variations from type, incl. *H. bisulcatus* Gras, and perhaps *H. brongniarti*, but perhaps not *Cardiaster perezi* Wright; LOBIOL (207) p. 60, pl. vi. *H. cf. perezi*; KILIAN & LORY (170) p. 56. *H. placenta*; DIBLEY (92) pp. 489, 490, 493: as zonal fossil; ROWE (288) pp. 309, 312, 316, 328. *H. planus*; DEECKE (82) pp. 42, 55 (?): DIBLEY (92) pp. 486, 488, 490, 493: STRAHAN (322): as zonal fossil; ROWE (288) pp. 309, 312, 314, 316. *H. subglobosus*; DIBLEY (92) pp. 487, 494: PAQUIER (257) p. 402: RIAZ (281) p. 768. *H. cf. subglobosus*; KILIAN & LORY (170) p. 61: RADKEVICH (277) p. xxxvi. *H. suborbicularis*; WISNIEWSKI (359) p. 241. *H. syriacus* Conrad, holotype and 17 paratypes found at Yale; BEECHER (26). *H. trecensis*; DIBLEY (92) pp. 488, 494.
- Holotypina*, Subord. of *Gnathostomata*, diagnosis, divided into Famm. *Pygasteridae*, *Discoidiidae*, *Galeritidae*, and *Conoclypeidae*; GREGORY in BATHER (19) p. 315.
- +*Holotypus*; GREGORY in BATHER (19) p. 316: place in phylogeny; LAMBERT (187) p. 48. *H. arenatus*; KOBY (177) p. 209. *H. cenomanensis*; FOURTAU (119). *H. aff. cenomanensis*; CHOIFFAT (62) pp. 156, 159, 163, 179, 193. *H. corallinus*; DEECKE (82) p. 24; *H. depressus*; BENOIST (31) p. 3: MUEHLBERG (236) pp. 313, 315, 320, 324: WISNIEWSKI (359) p. 232. *H. excisus* [sic]; CHOIFFAT (62) pp. 150, 185. *H. excisus*, Santonian as well as Cenomanian; FOURTAU (115) p. 21. *H. macropygus*; BAUMBERGER & MOULIN (23) p. 159. *H. micropygus*; CHOIFFAT (62) p. 184. *H. neocomiensis*; KILIAN & LORY (170) p. 50. *H. ouremensis*; CHOIFFAT (62) pp. 155, 179, 193.
- Holopneustes*; GREGORY in BATHER (19) p. 313.

- [†]*Homeaster*; GREGORY in BATHER (19) p. 323.
Homolampas; GREGORY in BATHER (19) p. 323.
- [†]*Homotoechus*, vide *Perischocidaris*.
- [†]*Hybechinus* Desor [err. pro *Hypechinus*]; GREGORY in BATHER (19) p. 313.
- [†]*Hypechinus patagonicus*; HATCHER (154) pp. 101, 102.
- [†]*Hypoclypeus*, referred to *Echinoneidae*; GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 48. *H. gibberulus*; MUEHLBERG (236) p. 320.
- [†]*Hypodiadema* Desor, discussed; LAMBERT (187) p. 33: maintained with a new genotype *Hemicidaris soleniformis*; the true type was *Diadema lamarcki* Desm., referred subsequently by Desor to *Acrosolenia*; *Hemicidaris rathieri* Cott. is added as "neotype"; and *Gymnotiara* Pomel [type *G. varusensis*] regarded as simple syn. [though if the genus as now defined does not include *H. lamarcki*, it would be more correct to adopt Pomel's name]; LAMBERT (186) p. 484. *H. desori* Capellini is based on a fragment of *Diademopsis serialis* (p. 13), *H. varusense*, relations to *Eodiadema* (p. 36); LAMBERT (187).
- [†]*Hypaster*, discussed; SCHLUETER (299) p. 364. *H. blayaci*, and *H. poruyannei*, vide sub *Epiaster*.
- Hypsodypeus*, vide *Heterodypeus*.
- [†]*Hypoapatagus* (vel *Hypoapatangus*); GREGORY in BATHER (19) p. 323: may or may not have subanal fasciole; GAUTHIER in FOURTAU (115) pp. 51, 57, 58. "*H. sp.*" Gregory, doubtful if of this genus; FOURTAU (118) p. 137. *H. sp.*, Priabona beds; OPPENHEIM (251) p. 114. *H. lefebvrei*, remains in the genus though it has a sub-anal fasciole; FOURTAU (115) p. 58. *H. pentagonalis*, vide *Euspatangus minutus*. *H. santamariai* [sic] n. sp., Lower Eocene, Gebel Haridi, Egypt, type in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 56, pl. iv.
- [†]*Ilarionia*; GREGORY in BATHER (19) p. 320.
- [†]*Inflaster* is syn. of *Physaster* Pomel, which is not an Ananchitid but an Aeropid; LAMBERT in Review of ANTHULA.
- [†]*Infraclypeus*, referred to *Echinoneidae*; GREGORY in BATHER (19) p. 320.
- [†]*Infularaster*; GREGORY in BATHER (19) p. 321. *I. excentricus*, incl. *I. hagenowi* Borch.; DEECKE (82) p. 42.
- [†]*Irriaster*; GREGORY in BATHER (19) p. 323.
- Irregularia*, Sub-class, diagnosis, divided into Orders *Gnathostomata* and *Atelostomata*; GREGORY in BATHER (19) p. 315.
- [†]*Isaster*; GREGORY in BATHER (19) p. 321.
- [†]*Isopneustes*; GREGORY in BATHER (19) p. 323.
- [†]*Jeronia*; GREGORY in BATHER (19) p. 321.
- [†]*Koninckocidaria*; GREGORY in BATHER (19) p. 302.
- Laganidae*, diagnosis; GREGORY in BATHER (19) p. 317.
- Laganum*; GREGORY in BATHER (19) p. 317. *L. sp.*; ANDERSON (11) p. 5. *L. sp.*, hybrid; BEDFORD (25) p. 285, pl. xxiii. [†]*L. balestrai*, n. sp., Priabona beds of La Granella near Priabona, type in Museo civico Bassano; OPPENHEIM (251) p. 91, pl. ix, x. *L. decagonale*, colour, variations, measurements; BEDFORD (25) p. 284, pl. xxiii. *L. depresso*; ANDERSON (11) p. 11: growth-stages figd.; BEDFORD (25) p. 283, pl. xxiii. [†]*L. fragile*; OPPENHEIM (251) p. 91.
- [†]*Lambertia* Oppenheim 1899, nom. preocc. Desvoidy 1863, et Souverbie 1869, mut. in *Oppenheimia*; COSSMANN (73): compared with *Nacospatangus* and *Atelospatangus* (p. 112), the name *Oppenheimia* Coiss. substituted (p. 338), and *L. gardinalei* redescr. (p. 113, pl. x); OPPENHEIM (251).
- [†]*Lambertiaster*; GREGORY in BATHER (19) p. 323.
- [†]*Lampadaster*; GREGORY in BATHER (19) p. 321.
- [†]*Lanigeria*; GREGORY in BATHER (19) p. 316.
- Leiocidarinae*, vide *Liocidarinae*.

- Leiocidaris*, relations to *Rhabdocidaris* discussed ; OPPENHEIM (2 p. 84 : key to French spp.; ACLOQUE (1) p. 463. $\dagger L.$ cf. a microstructure of spine (p. 224), $\dagger L. itala$, ditto (p. 225); HE (159) : Dames' description corrected, distinguished from *Cid calamus*, probably not known from Egypt ; OPPENHEIM (251) p. pl. xvii : specimen figured by Loriol probably not same sp. as t figd. by Koch ; LAMBERT in Review.
- \dagger *Leiocyphus* ; GREGORY in BATHER (19) p. 312.
- \dagger *Leiopedina* ; GREGORY in BATHER (19) p. 313. *L. samuni* ; OPPENHEIM (251) p. 89. *L. tallavignesi*, distribution discussed ; OPPENHEIM (2 p. 87 : spines from Vicentin so referred by Dames probably belong to a Cidarid ; HESSE (159) p. 225.
- \dagger *Leiosoma* Cott ; GREGORY in BATHER (19) p. 310. *L. jauberti*, referred to *Phymechinus* ; LAMBERT (186) p. 489.
- \dagger *Lenita* ; GREGORY in BATHER (19) p. 317.
- \dagger *Lepidechinus* ; GREGORY in BATHER (19) p. 301.
- \dagger *Lepidesthes* ; GREGORY in BATHER (19) p. 305.
- \dagger *Lepidesthidae*, diagnosis ; GREGORY in BATHER (19) p. 304.
- \dagger *Lepidocentridae*, diagnosis ; GREGORY in BATHER (19) p. 301.
- \dagger *Lepidocentrus* ; GREGORY in BATHER (19) p. 301, fig. xv.
- \dagger *Lepidocidaris* ; GREGORY in BATHER (19) p. 302.
- Lepidopleurus* Dunc. & Slad. non RISSO ; GREGORY in BATHER (19) p. 307 : distinguished from *Hemipedina* ; L BERT (187) p. 28. *L. blaburensis*, vide sub *Mesodiadema*.
- Leskia*, vide *Palaeostoma*.
- \dagger *Linchophorus* ; GREGORY in BATHER (19) p. 323.
- Linopneustes* ; GREGORY in BATHER (19) p. 323.
- Linthia* ; loc. cit. $\dagger L. aschersoni$ probably not identical with *L. esnechi* as Gregory supposes, but with *L. cavernosa* ; FOURTAU (118) p. *L. cavernosa*, variations from type, compared with *L. aschersoni* which is probably a syn. of this and not of *L. esnechi* as Gregory thinks GAUTHIER in FOURTAU (115) p. 39. $\dagger L. heberti$, Gascon and Vicen types compared ; OPPENHEIM (251) p. 107. $\dagger L. oblonga$; BLANCKS HORN (36) p. 38. $\dagger L. perfossa$; REIS (278) p. 84. $\dagger L. pseudocalis$ n. sp., Priabona beds of Priabona, type in Mus. f. Natur Berlin, also other localities and museums, compared with spp. *Schizaster* and *Linthia* ; OPPENHEIM (251) p. 107, pl. x; this should not be left in *Linthia* ; LAMBERT in Review. $\dagger L.$ aff. *subglobosa* REIS (278) p. 84.
- Liocidarinae*, nov. tribe of *Stereocidarinae* ; LAMBERT (187) p. 53.
- Lobophora truncata*, vide *Echinodiscus laevis*.
- \dagger *Loriolida*, incl. *Heterotiarara* and *Colpotiarara* Pomel, place in phylogeny LAMBERT (187) p. 49. *L. inaequale* (olim *Diadema*) ; LAMBERT (187) p. 49.
- Lovenia* ; GREGORY in BATHER (19) p. 323. *L. elongata* ; ANDERSON p. 5 : distrib. ; BEDFORD (25) p. 286. $\dagger L. forbesi$; CLARK (64) p. 1. *L. gregalis* ; ANDERSON (11) p. 7.
- \dagger *Lysechinidae*, diagnosis ; GREGORY in BATHER (19) p. 305.
- \dagger *Lysechinus*, discussed ; GREGORY in BATHER (19) p. 305.
- \dagger *Macraster* ; GREGORY in BATHER (19) p. 321.
- Macropneustes* ; GREGORY in BATHER (19) p. 323. $\dagger M. compressus$ KOCH (178) p. 56. $\dagger M. crassus$, not a *Megapneustes* now that diagnosis of that genus is altered ; GAUTHIER in FOURTAU (115) p. 39. $\dagger M. prevosti$, figd. ; BOURSault (45).
- \dagger *Magnosia* ; GREGORY in BATHER (19) p. 309. *M. camarensis* ; CHOU (62) p. 184. *M. globulus* and *M. pulchella* ; KILIAN & LORY (1966) p. 56.
- Maretia* ; GREGORY in BATHER (19) p. 323. $\dagger M. ovata$; WOLFF (1966) p. 56.

- M. planulata*, microstructure of spine; HESSE (159) p. 259. *Megaster*; GREGORY in BATHER (19) p. 321.
- †*Megapneustes*, this genus was based only on the absence of the sub-anal fasciole, a character to be used with great reserve in older forms, in fact the name was confessedly introduced "pour éviter à quelque confrère inconnu la peine de faire ce genre et de me mettre en Synonymie"; now a specimen of the genotype, *M. grandis*, shows traces of this fasciole, so to distinguish the genus from *Macropneustes* stress is now laid on the presence of tubercles on the interporiferous areas; but *Megapneustes* as thus defined differs from *Hypocephalangus* only by the depression of the ambulacra "quelquefois bien faible"; GAUTHIER in FOURTAU (115) p. 50; LAMBERT in Review confirms approximation to *Hypocephalangus*, but remarks that Echinoid genera are now-a-days instituted on ridiculously finikin distinctions. *M. lorioli*, n. sp., Lower Eocene, Gebel Haridi, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 48, pl. IV.
- Melitta*; GREGORY in BATHER (19) p. 317.
- Melitta*; GREGORY in BATHER (19) p. 317. *M. sexforis*; CONANT (71).
- M. testudinata*, breeding period; WILSON (355) p. 351.
- †*Melonechinus* M. & W. supersedes *Melonites* Norw. & Owen non Lam.; LAMBERT (187) p. 53.
- †*Melonites*; GREGORY in BATHER (19) p. 304: videa antea.
- †*Melonitidae*, diagnosis; GREGORY in BATHER (19) p. 304: altered to *Melonechinidae*; LAMBERT (187) p. 53.
- †*Melonitida*, Order, diagnosis, divided into Famm. *Palaechinidae*, *Melonitidae*, *Lepidesthidae*; GREGORY in BATHER (19) p. 303.
- Meoma*; GREGORY in BATHER (19) p. 323.
- †*Mesodiadema*, distinguished from *Hemipedina* (p. 28), diagnosis (p. 31), considered as the source of all *Pedininae* (p. 32), archaic characters (p. 36); *M. admeto* Quenst. non Münst. (sub *Cidaris*; Die Echin. pl. lxviii, f. 143, non 144) (p. 32); *M. blaburensis* Quenst. (sub *Leptocidaris*) (p. 31); *M. criniferum* Quenst. (sub *Cidaris*) (p. 31); *M. olifex* Quenst. (sub *Cidaris*) (p. 31); *M. simplex*, n. sp., "Lias moyen de Venarey" (p. 31), "Charmouthien de Mussy" explic. de pl. i, f. 10: LAMBERT (187).
- Mespilia*; GREGORY in BATHER (19) p. 313. *M. globulus*, microstructure of spine; HESSE (159) p. 243.
- Metalia*; GREGORY in BATHER (19) p. 323: incl. *Plagionotus* Ag. and *Plagiobrissus* Pomel; SCHLUETER (299) p. 362. *M. maculosa*; ANDERSON (11) p. 16: microstructure of spine; HESSE (159) p. 261. *M. sternalis*, habitat, distrib., measurements; BEDFORD (25) p. 286.
- †*Metaporhinus*; GREGORY in BATHER (19) p. 321. *M. convexus*, internal cast from Camporo, measured; MARIANI (222) p. 410.
- †*Micraster*; GREGORY in BATHER (19) p. 323. *M. sp.*, microstructure of spine; HESSE (159) p. 260, text-fig. *M. breviporus*, incl. *M. borchhardti* Hag.; DEECKE (82) p. 42. *M. coranguinum*; REIS (278) p. 3: incl. *Spatangus cuneatus* Hag.; DEECKE (82) pp. 71, 72: quoted by C. F. Roemer from Recklinghausen is perhaps *Diplodetus recklinghausenensis*; SCHLUETER (299) p. 368: and var. *latrix*; DIBLEY (92) pp. 484, 486, 488, 489, 493: var. *latrix* as zonal fossil; ROWE (288) p. 303: var. *rostratus* as zonal fossil; ROWE (288) p. 300. *M. corbovis*; DIBLEY (92) pp. 486, 488, 493: STRAHAAN (322): as zonal fossil; ROWE (288) pp. 313, 316, 320. *M. cortestudinarium*; DEECKE (82) pp. 92, 94: DIBLEY (92) pp. 490, 493: STRAHAAN (322): as zonal fossil; ROWE (288) pp. 303, 308, 328. *M. cf. cortestudinarium*, descr.; PETRACKEK (265) p. 35. *M. decipiens*, incl. *M. cortestudinarium* Auctt. from Miélandre; PAQUIER (257) pp. 427, 436. *M. gibbus*: ROWE (278) n. 4. *M. glyphus*; SCHMIDT (301) p. excvii. *M. le*

- 488, 493: as zonal fossil; ROWE (288) p. 313. *M. normanniae*; RIAZ (281) p. 770. *M. precursor*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) pp. 303, 308. *M. rostratus* Bucaille, validity and horizontal extension; FORTIN (114): the sp. not due to Bucaille but to Mantell; LAMBERT in Review of FORTIN (113). *M. tercensis*; GROSS-OUVRE (145) p. 65.
- Microcyphus*; GREGORY in BATHER (19) p. 313.
- †*Microdiadema*; GREGORY in BATHER (19) p. 309.
- †*Microlampas*; GREGORY in BATHER (19) p. 321.
- †*Micropedina*; GREGORY in BATHER (19) p. 310. *M. olisoponensis* (pp. 155, 172, 179, 193); *M. rotularis* (p. 184); CHOIFFAT (62).
- †*Micropsina*; GREGORY in BATHER (19) p. 313.
- †*Micropis*; GREGORY in BATHER (19) p. 310. †*M. fraasi*, Mid. Eocene; FOURTAU (115) p. 34. †*M. mokattamensis*; FOURTAU (116) p. 482.
- Micropyga*; GREGORY in BATHER (19) p. 309.
- Milletia*; GREGORY in BATHER (19) p. 321.
- †*Miocidaris* Doederl., relations to *Eotiaris* (p. 40); *M. amalthei* Quenst. (sub *Cidaris*) from Charmouthian of Venarey (Côte-d'Or) plates only, previous alleged occurrences in France refer to *Rhabdocidaris moreau* (p. 41, pl. i); LAMBERT (187).
- †*Miorthopsis* Pomel, based on 'hemiolioyclic' apex, "une disposition secondaire due au développement du périprocte et insuffisante pour justifier le genre"; LAMBERT (187) p. 29.
- †*Miotozaster exilis*; CHOIFFAT (62) p. 185.
- †*Mistechinus sickembergeri* [sic], n. sp., Mid. Eocene, N. of Minieh, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 32, pl. ii.
- Moira* (vel *Moera*); GREGORY in BATHER (19) p. 323: key to French spp.; ACLOQUE (1) p. 464. *M. atropos*, breeding period; WILSON (355) p. 351.
- Moiropeis*; GREGORY in BATHER (19) p. 323.
- †*Monodiadema*, distinguished from *Eodiadema*; LAMBERT (187) p. 35.
- Monophora*; GREGORY in BATHER (19) p. 317.
- Monoplacida*, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- †*Monostychia*; GREGORY in BATHER (19) p. 318. *M. australis*?; TATE (326) p. 111.
- Mortonia*; GREGORY in BATHER (19) p. 317.
- Moulinsia*; GREGORY in BATHER (19) p. 317.
- Nacospatangus*; GREGORY in BATHER (19) p. 323.
- †*Neocatopygus*; GREGORY in BATHER (19) p. 321.
- Neolampas*; GREGORY in BATHER (19) p. 321.
- Neopneustes*; GREGORY in BATHER (19) p. 323.
- †*Nucleolites*, incl. *Echinobrissus* (q.v.); GREGORY in BATHER (19) p. 320: place in phylogeny; LAMBERT (187) p. 49.
- Nucleolitidae*, diagnosis; GREGORY in BATHER (19) p. 320.
- †*Nucleopygus*; GREGORY in BATHER (19) p. 320.
- †*Ofaaster*; GREGORY in BATHER (19) p. 321. †*O. pilula*; FORTIN (113): as zonal fossil; ROWE (288) pp. 333, 342.
- Oligopodia*; GREGORY in BATHER (19) p. 320.
- Oligoporinae*, nov. tribe of *Echininae*, with sub-tribes *Pleurechininae*, *Triplechininae*, *Schizechininae*; LAMBERT (187) p. 54.
- †*Oligoporus*; GREGORY in BATHER (19) p. 304. *O. minutus*, redescr., measurements; BEDE (29) p. 49, pl. vii.
- Oligopygus*; GREGORY in BATHER (19) p. 320.
- †*Oolaster*; GREGORY in BATHER (19) p. 321.
- †*Opechinus*; GREGORY in BATHER (19) p. 312.
- †*Opissaster cotteaei*, vide etiam sub *Schizaster*.

Oppenheimia nom. nov. pro *Lambertia* (q. v.) Oppenheim 1899, non Desvoidy 1863 nec Souverbie 1869; COSSMANN (73): accepted; OPPENHEIM (251) p. 338: only differs from *Atelospatangus* by the interior fasciole, the existence of which, however, is very doubtful and not shown in the figure; LAMBERT in Review.

†*Oriolampas*; GREGORY in BATHER (19) p. 321.

†*Ornithaster*; GREGORY in BATHER (19) p. 323.

†*Orthechinus*, incl. *Gagaria*; GREGORY in BATHER (19) p. 310. *O. (Triplacidia) biarritzensis*; OPPENHEIM (251) p. 87.

Orthocidarinae, n. sub-fam. of *Cidaridae*; LAMBERT (187) p. 53.

†*Orthocidaris*; GREGORY in BATHER (19) p. 302.

Orthognatha Bernard rejected; LAMBERT (187) p. 55.

Ortholophinæ, diagnosis; GREGORY in BATHER (19) p. 312.

Ortholophus; GREGORY in BATHER (19) p. 312.

Orthoporinae, nov. tribe of *Echininae*, with sub-tribes *Prototiarinae*, *Cotteaudinæ*, *Temnechinæ*; LAMBERT (187) p. 54.

Orthopsoïdae, diagnosis; GREGORY in BATHER (19) p. 308.

†*Orthopsis*; GREGORY in BATHER (19) p. 308: distinguished from *Hemipedina*, genotype is *Cidaris miliaris* d'Arch.; LAMBERT (187) p. 28. *O. davidsoni*, vide sub *Hemipedina*. *O. floesti*, maintained; *O. globosa*, its aberrant nature, a return to *Mesodiadema* features; LAMBERT (187) p. 29. *O. microgramma*, vide sub *Hemipedina*. *O. miliaris*; CHOUFFAT (62) pp. 166, 172, 193: Egyptian specimens of small size; FOURTAU (115) p. 20. *O. morgani*, its aberrant nature, a return to *Diademopsis*; *O. ovata*, maintained; *O. peroni*, maintained; LAMBERT (187) p. 29. *O. repellini*; CHOUFFAT (62) p. 184. *O. repellini*; KILIAN & LORY (170) p. 56. *O. ruppeli*, vide sub *Diadema*. *O. saemannii*, vide sub *Hemipedina*. *O. similis* Stoliczka, Senonian, India "me paraît constituer le type d'un genre particulier, *Stephanopsis*" (q. v.); *O. varusensis*, maintained; LAMBERT (187) p. 29.

†*Ovicylpeus*; GREGORY in BATHER (19) p. 316.

†*Ovulaster*; GREGORY in BATHER (19) p. 321.

†*Pachycylpeus*, referred to *Pygasteridae* (p. 316), to *Echinoneidae* (p. 320); GREGORY in BATHER (19).

†*Palaeechinidae*, diagnosis; GREGORY in BATHER (19) p. 304.

†*Palaeochinoidea*, Sub-class, rejected; GREGORY in BATHER (19) p. 299. See also General Paragraph, supra.

†*Palaeochinus*; GREGORY in BATHER (19) p. 304, fig. xvi.

Palaeobrissus, referred to *Spatangidae adetinae*; GREGORY in BATHER (19) p. 322.

†*Palaeocidaris* syn. of *Echinocr.* (q. v.); LAMBERT (187) p. 42.

†*Palaeodiscidae*, diagnosis; GREGORY in BATHER (19) p. 300.

†*Palaeodiscus*, discussed; GREGORY in BATHER (19) p. 301.

†*Palaeolampus*; GREGORY in BATHER (19) p. 321.

†*Palaeopedina* [errone *Palae-*, *Paleo-*, *Paloe-*, *Paloeo-*, et *Poeloeo-pedina*], n. g. allied to *Hemipedina*, with genotype *Diadema globulus* Ag. (vide infra) (p. 22), place in phylogeny (p. 49); LAMBERT (187). *P. bonei*, vide sub *Hemipedina*. *P. globulus* (Ag.), accepted in sense of Cotteau (Paleont. franc. pl. 385), i.e. Leymerie's diagnosis not figures, = Agassiz cast of *Hemicidaris buccalis* T. 65 (p. 22, text-figg. 4-6); *P. minima* Ag. (sub *Diadema*), incl. *Diademopsis exigua* Cott. as young (p. 27); *P. pacomei* Cott. (sub *Diadema*), discussed (p. 27); LAMBERT (187).

Palaeopneustes; GREGORY in BATHER (19) p. 322. *P.* sp. nondescr., 8° 37' N., 75° 37' E., 224 fms., 200 specimens, colour; ANDERSON (11) p. 7. *P. niasicus*, n. sp., 470 metres S. Nias Channel, L. DOEDERLEIN photo, but no description; CHUN (63) p. 362.

Palaeostoma, incl. *Leskia*; GREGORY in BATHER (19) p. 323.

Palaeostomidae, diagnosis; loc. cit.

- Palaeotropus*; loc. cit. *P. hirondellei*; RICHARD (282) p. 79, figg. 28, 29.
Paleopedina, vide *Palaeopeda*.
Palaeopeda, vide *Palaeopeda*.
†*Parabriassus pseudoprenaster*; OPPENHEIM (251) p. 112.
†*Paracidarid* Pomel, based on grouping of primaries which is accidental and exceptional only; LAMBERT (187) p. 37.
†*Paradoxechinus*; GREGORY in BATHER (19) p. 312.
†*Paralampus*; op. cit. p. 321.
Parasalenia; op. cit. p. 313. *P. gratioosa*, Invisible Bank, Andaman Is.; ANDERSON (11) p. 16.
†*Pedina*; GREGORY in BATHER (19) p. 309, fig. xxvii. *P. antiqua*, relations to *Diademopsis*; LAMBERT (187) p. 30. *P. inflata*; GREPPIN (138) p. 189.
Pedinidae, diagnosis; GREGORY in BATHER (19) p. 309.
Pedininae, sub-fam. of *Diadematidae* with tribes *Orthopsinae* and *Climapinidae*; LAMBERT (187) p. 53.
†*Pedinopsis*; GREGORY in BATHER (19) p. 313. *P. desori*; CHOFFAT (62) p. 185. *P. meridianensis*; KILIAN & LORY (170) p. 56.
†*Pedinothuria*; GREGORY in BATHER (19) p. 310.
Pelanechininae, diagnosis; loc. cit.
†*Pelanechinus*; loc. cit.
†*Peltastes*; op. cit. p. 306: place in phylogeny; LAMBERT (187) p. 49. *P. studeri*; KILIAN & LORY (170) p. 60.
†*Periuster roachensis*, n. sp., Turonian of El Gaa, Abou Roach, Egypt, perhaps = *Hemiuster fourneli* Auctt., type in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 24, pl. i: not to be confused with *Hemiaster pseudo-fourneli*; FOURTAU (120) p. 630.
Pericosmus; GREGORY in BATHER (19) p. 323. *P. sp.*, hitherto only known fossil, now found in Moxos Is. and off Port Blair, 55 fms.; ANDERSON (11) pp. 5, 10. †*P. marianii* (p. 552), †*P. spatangoides* (pp. 550-552); ALESSANDRI (6).
†*Perischocidaris*, incl. *Homotoechus*; GREGORY in BATHER (19) p. 304.
†*Perischodomus*; op. cit. p. 302.
†*Permociduris*, n. g. of *Archaeocidaridae*, comprising *P. coaeurus* Quenst. (sub *Cidaris*), *P. forbesi* Kon. (sub *Cidaris*) as genotype, and *P. verneuili* King (sub *Archaeocidaris*); LAMBERT (187) pp. 39, 47.
Peronella decagonalis; ANDERSON (11) p. 7.
†*Peronia*; GREGORY in BATHER (19) p. 308.
†*Phalacrechinus*, n. g. of *Echininae* "à tubercles incrémentés, limités à la face ovale," with genotype *Pleurodiadema gauthieri* Cott. of Bathonian; LAMBERT (187) p. 37.
†*Phalacropedina*, n. s.-g., a name that could be given to a sub-genus that might be carved out of *Hemipedina* by taking *H. guerangeri* as type, along with *H. calva*, *H. pusilla*, and *H. minima*, "si l'on tient à créer...un sous-genre nouveau"; LAMBERT (187) p. 30. [Mr Lambert kindly informs me that he does consider this a subgenus, with "une valeur au moins égale à *Diademopsis*."]
†*Pholidocidaris*; GREGORY in BATHER (19) p. 305.
Phormosoma; op. cit. p. 311. *P. sp.*, Nias Channel; CHUN (63) p. 362.
P. uranis, galls of parasitic copepod; RICHARD (282) p. 80, figg. 30, 32.
Phyllacanthus annulifera; ANDERSON (11) p. 5. *P. dubia*, microstructure of spine; HESSE (189) p. 236. *P. imperialis*, ditto; loc. cit.: joints; STEWART (318).
†*Phyllobriassus*; GREGORY in BATHER (19) p. 321. *P. duboisi*; BAUMBERGER & MOULIN (23) pp. 167, 176. *P. gresslyi*; CHOFFAT (62) p. 184. *P. cf. gresslyi*; BAUMBERGER & MOULIN (23) p. 171.
Phylloclypeus; GREGORY in BATHER (19) p. 321.
†*Phymechinus*; op. cit. p. 309. *P. benoisti*; n. sp., Vesulian of l'Indre,

allied to *P. mirabilis*; LAMBERT (186) p. 488, pl. viii: BENOIST (31) p. 4.

†*Phymopedina*, distinguished from *Hemipedina*; LAMBERT (187) p. 28.

†*Phymosoma* Haime 1853 preferred to *Cyphosoma* Ag. (q.v.), but "Phymosoma" Shipley, récemment proposé pour des Holothuries devra être abandonné et je propose de le remplacer par "Prophytmosoma" (q.v.); LAMBERT (187) p. 54. *P.* sp. nondescr; SCHLUETER (297) p. 420. *C.* [i.e. *P.*] *abbatei*; BLANCKENHORN (36) p. 34: Santonian not Turonian; FOURTAU (115) p. 21. *C.* [i.e. *P.*] *alcantarensis*; CHOFFAT (62) pp. 172, 179, 193. *C.* [i.e. *P.*] *corollare*; DIBLEY (92) p. 493: as zonal fossil; ROWE (288) p. 304. *C.* [i.e. *P.*] *cirriforme*; OPPENHEIM (251) p. 86. *C.* [i.e. *P.*] *debile*; CHOFFAT (62) p. 184. *C.* [i.e. *P.*] *granulosum*, microstructure of spine; HESSE (159) p. 223. *C.* [i.e. *P.*] *koenigi*; DIBLEY (92) pp. 488, 489, 493: as zonal fossil; ROWE (288) p. 304: microstructure of spine; HESSE (159) p. 222. *P. loryi*; KILIAN & LORY (170) p. 56. *C.* [i.e. *P.*] *microstoma*; CHOFFAT (62) p. 184. *P. princeps*; BRYDONE (51) p. 12: (*P.* 71) and *P. cf. princeps* (p. 55); DEECKE (82). *C.* [i.e. *P.*] *radiatum*; DEECKE (82) p. 43: DIBLEY (92) pp. 486, 493: as zonal fossil; ROWE (288) p. 313. *C.* [i.e. *P.*] *ribei*; CHOFFAT (62) p. 185. *C.* [i.e. *P.*] *simplex*; BRYDONE (51) p. 12. *C.* [i.e. *P.*] *spatuliferum*, as zonal fossil; ROWE (288) p. 304. *P. taeniatum*; DEECKE (82) p. 71. *C.* [i.e. *P.*] *wetherelli*; BRYDONE (51) p. 12.

Phymosominae, n. sub-fam. of *Echinometridae*; LAMBERT (187) p. 54.

†*Physaster*, vide sub *Inflataster*.

Pileatoida, Sub-order of *Exocysta*, comprises *Pygasteridae* and *Galeritidae*; LAMBERT (187) p. 55.

†*Pileus*, referred to *Pygasteridae* (p. 316) to *Echinoneidae*; GREGORY in BATHER (19) p. 320.

Placodiadema; GREGORY in BATHER (19) p. 309, fig. xxv.

Plagiobrissus, vide *Metalia*.

Plagionotus, vide *Metalia*.

Platibrissus; GREGORY in BATHER (19) p. 322. *P. roemerii*; ANDERSON (11) p. 5.

†*Plegiocidaris* Pomel, relations to *Eotiaris* (p. 40); *P. desori* Cott. 1857 (sub *Cidaris*) (p. 48); *P. ilminsterensis*, at May? (p. 47); *P. martini* Cott. (sub *Cidaris*) discussed (p. 40); *P. moorei* from couches à *Leptaena*, May, Calvados (p. 47); *P. senex*, n. sp., "la petite espèce du Rhétien d'Oberdorf, décrite sous le nom de *Cidaris desori*" [author and date not stated], non. *C. desori* Cott. 1857 (p. 48): LAMBERT (187). *Plesianthus*; GREGORY in BATHER (19) p. 318. †*P. testudinarius*; WOLFF (360).

†*Plesiuster*, discussed (p. 363); *P. (?) canifer*, n. sp. (? n. g., LAMBERT in Review), "Quadraten-Kreide," zone of *Beckaria scocklandi*, Westphalia (p. 371, pl. xvii); *P. (?) cordiformis*, n. sp., Lower *Mucronatus* beds, Westphalia (p. 372, pl. xvi); *P. minor* Schluet. olim *Briassopis* (? n. g. LAMBERT in Review), redescr. (p. 369, pl. xvi): SCHLUETER (299). *P. cf. recklinghausenensis* from Brunswick; SCHLUETER (297) p. 418.

†*Plesiocidaria* Pomel, apparently retained as subgen. of *Pseudocidaris* and with genotype *P. alpina* Ag. (sub *Hemicidaris*), considered as source of *Hemicidariinae*; LAMBERT (186) p. 482.

†*Plesiocidaroida*, Order, diagnosis, divided into Famm. *Tiarechinidae*, *Lysechinidae*; GREGORY in BATHER (19) p. 305.

†*Plesiodiadema insignitum*; CHOFFAT (62) p. 185.

†*Plesiolampus*; GREGORY in BATHER (19) p. 321.

†*Plesiopatangus coleauvi*, only the two genital pores of the left side present in this species; FOURTAU (115) p. 51: vide etiam sub *Euspatangus*.

Pleurechiniae, nov. sub-tribe of *Oligoporinas*; LAMBERT (187) p. 54.

- Pleurechinus*; GREGORY in BATHER (19) p. 312.
 †*Pleurodiadema*; op. cit. p. 309. *P. gauthieri*, vide *Phalacrechinus*.
 †*Plistophyma*; GREGORY in BATHER (19) p. 309.
Podocidaria; GREGORY in BATHER (19) p. 308.
Poelocopidina, vide *Palaeopedina*.
 †*Polycidaris*; GREGORY in BATHER (19) p. 302. *P. ludovici* (MENE^{RE} BETTONI) (34) p. 11.
 †*Polycyphus*; GREGORY in BATHER (19) p. 310. *P. normannus*; BEN (31) pp. 3, 4.
Polyplacida, rejected (see general paragraph supra); LAMBERT (187) p. 1
Polyoporinae tribe of *Echininae*, with sub-tribes *Spherechiniae*, *Trochostominae*, *Heliocidarinae*, *Acrocladinae*; LAMBERT (187) p. 54.
 †*Pomelia*, n. g. of *Cassidulidae* allied to *Faujasia* (p. 66), with genotype *delgadoi*, n. sp., Senonian of Portugal, type at Direct. trav. de Lisbon (p. 67, pl. vi); LORIOL (207).
Porocidaris sp.; KOEHLER (180) p. 815. *P. elegans* see *Dorocidaris schmidti*; OPPENHEIM (251) p. 85; FOURTAU (116) pp. 481, 490 var. *aegyptica*, microstructure of spine; HESSE (159) p. 225. *serrata*, ditto; loc. cit.
Pourtalesia, discussed; GREGORY in BATHER (19) p. 323. *P. sp.* Lacazea; ANDERSON (11) p. 10.
Pourtalesiidae, diagnosis, discussed; GREGORY in BATHER (19) p. 323.
 †*Prenaster*; loc. cit. *P. sp.* (p. 44), *P. alpinus* (p. 37); REIS (278). *arabicus*, n. sp., Lower Eocene, Gebel Haridi, Egypt, type in Inst. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 46, pl. ii. *P. latus*; OPPENHEIM (251) p. 111. *P. carinatus*, very different from *Prenaster*, possibly *Cyclaster*; LAMBERT in Review of *Anthula*.
 †*Prodiadema* Pomel, maintained as sub-genus of *Gymnocidaris*, genotype *Ciduris agassizi* Roem. but not *Hemicidaris cartieri*; LEBERT (186).
Progonolampas, vide sub *Echinolampas justinae*.
Proscutidae, n. fam., divided in sub-famms. *Echinocyaminae* and *Fibrinae*; LAMBERT (187) p. 55.
Protocyamus, nom. nov. pro *Echinites* Duncan, non Leske, nec Miill Trosch., a genus of *Discoidiidae*; GREGORY in BATHER (19) p. 316.
 †*Prototiaria*, rediagnosed, archaic characters (p. 36), relations to *Pleurodiadema*, considered as source of *Salmacinae*, *Arbaciadinae*, *Echininae* (p. 37), genotype *P. jutieri* Cott. (sub *Pleurodiadema*) place in phylogeny (p. 50); LAMBERT (187).
Prototiarinae, nov. sub-tribe of *Orthoporinae*; LAMBERT (187) p. 54.
Prymnaderitinae, section of *Spatangidae*; GREGORY in BATHER (19) p. 323.
Prymnodermatinae, ditto; op. cit., p. 323.
Pseudomechinus; GREGORY in BATHER (19) p. 313: key to French species ACLOQUE (1) p. 463. *P. duciei* is a *Schizechinus*; FOURTAU (19) p. 138. †*P. dubius*; DOUXAMI (95) p. 420. †*P. gravesi*; PÁLFY (1964). †*P. hiselyi*; BAUMBERGER & MOULIN (23) p. 159. †*P. lyra* is a *Taxophyma*, s. g. of *Anapetus*; FOURTAU (118) p. 138. *P. narius*, see II, F, viii; GIARD (127). †*P. mirabilis*, microstructure of spine; HESSE (159) p. 243. †*P. tenuis*; BAUMBERGER & MOULIN (1964) pp. 171, 191. †*P. theveneti*; KILIAN & LORY (170) p. 56. †*P. wardii*, microstructure of spine; HESSE (159) p. 244.
 †*Pseudananchys* sp.; PAQUIER (257) p. 402.
Pseudoboletia; GREGORY in BATHER (19) p. 313.
 †*Pseudocatopygus*; GREGORY in BATHER (19) p. 321.
 †*Pseudocidaris* Etallon, revived with genotype *P. thumannii* [sic] Ag. (*Hemicidaris*); LAMBERT (186); place in phylogeny; LAMBERT (187) p. 50. *P. clunifera* and *P. crispicans*; CHOIFFAT (62) p. 184. *peroni* vide sub *Asterocidaris*.

†*Pseudodesorella*; GREGORY in BATHER (19) p. 321.

†*Pseudodiadema*; GREGORY in BATHER (19) p. 309, figg. xxiii, xxiv: relations to *Eodiadema*; LAMBERT (187) p. 36. *P. alcantarense* pp. 150, 155, 163, 166, 172, 179, 185, 193; *P. bourgueti* (p. 184); *P. delgadoi?* (p. 184); *P. delicatulum* (p. 185); CHOFFAT (62). *P. diatretum*; CLARK (66) p. 339. *P. guerangeri*; CHOFFAT (62) pp. 150, 155, 163, 172, 185, 192. *P. interjectum*; CHOFFAT (62) pp. 150, 159, 163, 185, 193: redescr. from fresh specimens; LORIOL (207) p. 68, pl. vii. *P. lobatum*, microstructure of spine; HESSE (159) p. 219. *P. lusitanicum* (pp. 155, 172, 192), *P. macropygus* (pp. 150, 185); CHOFFAT (62). *P. mammillatum*; DEECKE (82) p. 24. *P. orbignyi*; BENOIST (31) p. 4: a Rauracian and Sequanian sp. now found in Vesulian, extraordinary example of specific longevity; LAMBERT (186) p. 487. *P. ornatum*; DIBLEY (92) p. 493. *P. pentagonum*; BENOIST (31) p. 3: GREPPIN (138) p. 197. *P. pseudodiadema*, type being lost, specimen from Neuchâtel (Agassiz Echin. Suisses, pl. xvii, ff. 49, 53) is taken as neotype, and compared with *P. seguini*; LAMBERT (186) p. 487. *P. rotulare*; BAUMBERGER & MOULIN (23) p. 159: KILIAN & LORY (170) p. 52. *P. schluteri* (p. 185), *P. scruposum* (p. 185), *P. aff. sculptile* (pp. 172, 193); CHOFFAT (62). *P. seguini*, n. sp., Vesulian of l'Indre; LAMBERT (186) p. 486, pl. viii: BENOIST (31) p. 4. *P. somaliense*, n. sp., Bihendula Limest. (Bathonian or Callovian), S. of Berbera, Somaliland; GREGORY (136) p. 41, figg. 4, 5: not a *Pseudodiadema*, but intermediate between *Micropsidida* & *Prototiarida* by the side of *Progonechinus*; LAMBERT in Review. *P. subcomplanatum*; BENOIST (31) p. 3. *P. superbum*; KOBY (177) p. 209; LORIOL (206) p. 182. *P. variolare*, microstructure of spine; HESSE (159) p. 223.

†*Pseudopedina*; GREGORY in BATHER (19) p. 309.

†*Pseudosalenia delgadoi*; CHOFFAT (62) p. 185.

†*Pygaster*; GREGORY in BATHER (19) p. 316, figg. xi, xxxv: place in phylogeny; LAMBERT (187) p. 48.

Pygasteridae, diagnosis; GREGORY in BATHER (19) p. 316: divided in sub-famms. *Holectypinae* and *Discoidinae*; LAMBERT (187) table B, p. 50.

Pygastrides; GREGORY in BATHER (19) p. 316.

†*Pygulus*; GREGORY in BATHER (19) p. 320. *P. cylindricus* (pp. 53, 57), *P. depressus* (p. 53), *P. desmoulini* (p. 56); KILIAN & LORY (170).

†*Pygorhynchus*; GREGORY in BATHER (19) p. 321.

†*Pygorhytis*; GREGORY in BATHER (19) p. 321.

†*Pygoespatangus*; GREGORY in BATHER (19) p. 323.

†*Pygurostoma*; GREGORY in BATHER (19) p. 321.

†*Pygurus*; GREGORY in BATHER (19) p. 321: place in phylogeny; LAMBERT (187) p. 49. *P. sp.*; KILIAN & LORY (170) p. 51. *P. blumenbachii*; DEECKE (82) p. 26: HUENE (166) p. 365. *P. buchi* (p. 171), *P. gillieronii* (p. 166), *P. rostratus* (pp. 171, 190); BAUMBERGER & MOULIN (23). *P. cf. rostratus*; CHOFFAT (62) p. 184.

†*Pyrina*; GREGORY in BATHER (19) p. 320. *P. cylindrica*; KILIAN & LORY (170) pp. 56, 57. *P. desmoulini*; DEECKE (82) p. 71. *P. globosa*; CHOFFAT (62) p. 184. *P. incisa*, loc. cit.; BAUMBERGER & MOULIN (23) p. 171. *P. junqueiroensis*; CHOFFAT (62) p. 185. *P. pygoea*; KILIAN & LORY (170) pp. 37, 50, 52.

†*Rachiosoma paucituberculatum*; KILIAN & LORY (170) p. 52.

†*Radiceyphus*, vide *Arachniopleurus*.

Regularia Ectobranchiata, Subclass, diagnosis, incl. only Order *Dia-demoida*; GREGORY in BATHER (19) p. 306.

Regularia Endobranchiata, Subclass, diagnosis, divided into Orders, *Bothriocidaroida*, *Cystocidaroida*, *Cidaroida*, *Melania-*

roida; GREGORY in BATHER (19) p. 300 et seq.

Rhabdocidarinae, nov. tribe of *Stereocidarinae*; LAMBERT (187) p. 53.
Rhabdocidaris; GREGORY in BATHER (19) p. 302: relations to *Leiocidaris* discussed; OPPENHEIM (251) p. 84. †*R. angloaustrica*, microstructure of spine (p. 217), †*R. anhaltina*, ditto (p. 224); HESSE (159). *R. annulifera*, incl. *Schleinitzia crenularis*, habitat, distrib., growth-changes; BEDFORD (25) p. 274, pl. xxi. *R. baculosa*, Mauritian var. of de Loriol is constant in Andaman Sea and is separate sp.; ANDERSON (11) p. 5. *R. bispinosa*, valid; BEDFORD (25) p. 273. †*R. bonolai*, n. sp., Cenomanian, beds with *Neolobites vibrayeanus*, Beharieh oasis, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 8, pl. i. †*R. caprimontana*; KILIAN & LORY (170) p. 33: microstructure of spine; HESSE (159) p. 232: var. *remus*; BLEICHER & MIEG (40). †*R. cascaensis*; CHOIFFAT (62) p. 184. †*R. copeoides*, microstructure of spine; HESSE (159) p. 232. †*R. crameri*; BLANCKENHORN (36) p. 39: notes; FOURTAU (115) p. 17. †*R. delgadoi*; CHOIFFAT (62) p. 184. †*R. dubia*; AIRAGHI (4) p. 69. †*R. horrida*; GREPPIN (138) p. 187; MUEHLBERG (236) p. 306: STRUEBIN (324) pp. 335, 336, 337: TOBLER (328) p. 291. †*R. imperialis*, probably incl. *Dorocidaris papillata* var. *calabria* De Stefani; AIRAGHI (4) p. 68. †*R. insueta*; CHOIFFAT (62) p. 184. †*R. jauberti* (pp. 50, 52), †*R. kiliani* (pp. 49, 50); KILIAN & LORY (170). †*R. lacertosa*; CHOIFFAT (62) p. 184. †*R. libyensis*, the trivial name is "sinon un barbareme, tout au moins un néologisme parfaitement inutile"; FOURTAU (118) p. 137. †*R. maxima*, microstructure of spine; HESSE (159) p. 218. †*R. mespilum*; OPPENHEIM (251) p. 84. †*R. moreau* vide sub *Miocidaris amalthei*. †*R. navillei*, an Indian sp. from Egypt, fragments descr.; FOURTAU (115) p. 29. †*R. nobilis*; KILIAN & LORY (170) p. 15: microstructure of spine; HESSE (159) p. 233. †*R. orbigniana*, ditto; loc. cit. †*R. schlumbergeri*; CHOIFFAT (62) p. 184. †*R. trispinata*, microstructure of spine; HESSE (159) p. 233. †*R. tuberosa*; BAUMBERGER & MOULIN (23) p. 171: CHOIFFAT (62) p. 184: KILIAN & LORY (170) p. 50.

†*Rhabdopleurus*, vide *Glyptocyphus*.

Rhinobrissus; GREGORY in BATHER (19) p. 323.

†*Rhoëchinus*; op. cit. p. 304.

Rhynchopygus; op. cit. p. 321.

Rotula, and *R. augusti*; op. cit. p. 317, fig. ix.

Rotulidea; GREGORY in BATHER (19) p. 317.

Runa; loc. cit.

Salenia; op. cit. p. 306, figg. xiii, xvi, xix. *S.* sp.; ANDERSON (11) p. 5. †*S. bellula*; CLARK (66) p. 339. †*S. choffati*; CHOIFFAT (62) p. 185. †*S. fraasi*, redescr. from Santonian of Egypt, differences from De Loriol's description; FOURTAU (115) p. 18. †*S. granulosa*; DEECKE (82) p. 71: as zonal fossil; ROWE (288) p. 318. †*S. lusitanica*; CHOIFFAT (62) p. 185. †*S. prestensis*; KILIAN & LORY (170) pp. 56, 57. †*S. cf. prestensis*; FICHEUR (108) p. 572. †*S. pygmaea* and †*S. scutigera*; DEECKE (82) p. 71. †*S. tumidula*; CLARK (66) p. 339.

Salemiidae, diagnosis; GREGORY in BATHER (19) p. 306.

Salmacis; op. cit. p. 312. †*S.* sp.; WOLFF (360). *S. globator* Bell (an L. Agass.?), incl. "*S. sulcatus*" Sladen, habitat, colour of spines, measurements (p. 282, pl. xxii); *S. rarispina*, probably = *Echinus sphaerooides* Linn., measurements (p. 283); *S. sulcata*, distrib., relation to *S. alexandri*, colour in life, measurements (p. 281, pl. xxii): BEDFORD (25).

Salmacopsis; GREGORY in BATHER (19) p. 313.

†*Sarsella*; op. cit. p. 323.

†*Scagliaster*, literary history; SCHLUETER (299) p. 375.

†*Scaptodiadema*, distinguished from *Hemipedina*; LAMBERT (187) pp. 28, 30.

Schizaster; GREGORY in BATHER (19) p. 323. *S.* sp.; ANDERSON (11) p. 6; †VERRI & ANGELIS D' OSSAT (339) p. 259: Bouvet Id.; CHUN (63) p. 495: microstructure of spine; †HESSE (159) p. 260. †*S. ambulacrum*; OPPENHEIM (251) p. 110. †*S. ameghinoi*; HATCHER (154) pp. 101, 102. †*S. canaliciferus*; MELL (230) p. 332: descr. and measurements; COPPA (72) p. 36: microstructure of spine; HESSE (159) p. 259. †*S. foveatus*; FOURTAU (116) p. 482. *S. fragilis*; DOEDERLEIN (93) p. 197; KNIPOVICH (175) pp. 452, 458. †*S. cf. karreri*; LOERENTHEY (204) p. 61. †*S. legraini*, n. sp., Helvetician of Gebel Ramleib, Egypt, type in Mus. Hist. Nat., Paris; FOURTAU (115) p. 60, pl. iii. †*S. lucidus*; OPPENHEIM (251) p. 110. *S. moseleyi*; MEISSNER (229) p. 15. *S. philippii*, measurements of several specimens, much variation; loc. cit. †*S. rimosus*; OPPENHEIM (251) p. 110. †*S. santamariai* [sic], n. sp., Lower Eocene, Gebel Haridi, Egypt, holotype in Mus. Hist. Nat., Paris; GAUTHIER in FOURTAU (115) p. 44, pl. iii. †*S. studeri*; OPPENHEIM (251) p. 111. †*"S. thebensis"* Lor.³ Gregory, is *Opissaster*; FOURTAU (118) p. 136. †*S. vicinalis*; OPPENHEIM (251) p. 111.

Schizechiniae, nov. sub-tribe of *Oligoporinae*; LAMBERT (187) p. 54.

Schleinitzia crenularis, vide *Rhabdocidaris annulifera*.

†*Scolopendrites* Gesner 1565, is a spine of a *Tiaris*; LAMBERT (186) p. 483. *Scutella*; GREGORY in BATHER (19) p. 317, fig. xxxv. *S. excentricus*, meaning of its asymmetry; HARRINGTON (152). †*S. innesi*; DEPÉRET (89) p. 402. †*S. interlineata*, by position of periproct approaches *Scutulum* Tournouer; LAMBERT in Review of MERRIAM (175) Zool. Rec. 1899. †*S. paulensis* not a mere var. of *S. subrotunda* as maintained by Gregory; FOURTAU (118) p. 137. †*S. striatula*, vide *Echinorachnius excentricus*. †*S. subrotunda*; †LOERENTHEY (204) p. 59: measurements; COPPA (72) p. 35. †*S. truncata*, ditto; COPPA (72) p. 36.

Scutellidae, diagnosis; GREGORY in BATHER (19) p. 317: divided into sub-fam. *Arachninae* and *Dendrasterinae*; LAMBERT (187) p. 55.

†*Scutellina*; GREGORY in BATHER (19) p. 317. *S. patella*; CLARK (84) p. 5: TATE (326) p. 111.

Scutuliniae (vel *Scrutuliniae* [sic]?) nov. tribe of *Dendrasterinae*; LAMBERT (187) p. 55.

†*Sismondia*; GREGORY in BATHER (19) p. 317. *S. occitana*; PÁLFY (256) p. 64. *S. rosacea*, distinguished from *S. planulata*; OPPENHEIM (251) p. 90.

Spatangocystis, referred to *Spatangidae Adetinae* (p. 322), and to *Pourtulidae* (p. 324); GREGORY in BATHER (19) fig. xlvi.

Spatangidae, diagnosis, divided into sections—*Adetinae*, *Prymnadetinae*, and *Prymnodesminae*; op. cit. p. 321.

†*Spatangomorpha*; GREGORY in BATHER (19) p. 323.

Spatangus; loc. cit. & figg. xi, xxxviii, xliv, xlv: key to French spp.; ACLOQUE (1) p. 464: key to Belgian spp.; LAMEERE (188) p. 36: †*S.* sp. Miocene; NELLI (240) p. 415: microstructure of spine; HESSE (159) p. 258. †*S. austriacus*?; DEL BUE (87) p. 129. †*S. corsicus*; ALESSANDRI (6) p. 552. †*S. hoffmanni*, microstructure of spine; HESSE (159) p. 258. †*S. pantanellii*, vide *Eupatangus minutus*. †*S. purpureus*; AIRAGHI (4) p. 74: microstructure of spine; HESSE (159) p. 259. *S. raschi*; CHUN (63) p. 158.

Sperosoma sp.; CHUN (63) p. 495. *S. grimaldii*; RICHARD (282) p. 79, fig. 27.

Sphaerechiniae nov. sub-tribe of *Polyporinae*; LAMBERT (187) p. 54.

Sphaerechinus; GREGORY in BATHER (19) p. 313: key to French spp.; ACLOQUE (1) p. 464. *S. granularis*, see II, I, viii; HERBST (156), VERNON (337, 338), & WINKLER (358); †AIRAGHI (4) p. 70: ♀; VIGUIER

- (343): galvanotaxis of larva; CARLGREN (56) p. 473: host of Copepod, and of a Lichomolgida; GIESBRECHT (129) p. 201: microstructure of spine; HESSE (159) p. 243.
- †*Stegaster*; GREGORY in BATHER (19) p. 321. *S. facki*, microstructure of spine; HESSE (159) p. 259: vide etiam sub *Cardiaster maximus*. *S. subtrigonatus* Catullo, olim *Nucleolites*, incl. *N. cordiformis* Catullo, and *Stegaster*, vel *Holaster*, vel *Cardiaster*, vel *Scagliaster italicus* Ag. sp.; SCHLUETER (299) p. 376.
- †*Stenonia*; GREGORY in BATHER (19) p. 321. *S. tuberculata*, redescr., compared with *Echinocorys vulgaris*, *E. sulcatus*, and *Jeronia pyrenaica*; SIMIONESCU (306) p. 35, pl. iii.
- †*Stephanopsis*, n. g. with genotype *Orthopsis similis* (q. v.); LAMBERT (187) p. 29.
- Sterechinus antarcticus*, n. g. et sp. of *Echinidae*, 'Belgica' expedition; KOEHLER (180) p. 815.
- Stereocidarinae*, n. sub-fam. of *Cidaridae*, further divided into tribes *Rhabdo-* and *Lio-cidarinae*; LAMBERT (187) p. 53.
- Stereocidaris*; GREGORY in BATHER (19) p. 302, fig. xvii. *S. sp.* nondescri. (p. 158), *S. sp.* nondescri., 470 metres, S. Nias Channel, L. DOEDERLEIN photo but no description (p. 363); CHUN (63). †*S. cretosa*, vide *Cidaris (Stereocidaris) subvesiculosa*. †*S. malum*; KILIAN & LORY (170) pp. 53, 56.
- Stereodermata* Keeping 1875, preferred to *Stereosomata* Duncan 1889, rejected (see general paragraph supra); LAMBERT (187) p. 53.
- Sternata*, Subord. of *Atelostomata*, diagnosis, divided into famm. *Collyritidae*, *Echinocorythidae*, *Spatangidae*, *Palaeostomidae*, *Pourtale-siidae*; GREGORY in BATHER (19) p. 321.
- †*Sternotaxis*, s. g. of *Holaster*; loc. cit.
- †*Stigmatopygus* d'Orb.; loc. cit.: syn. of *Cyrtoma* McClelland 1840; ORTMANN (255) p. 369.
- †*Stirechinus*; GREGORY in BATHER (19) p. 313.
- †*Stomechinus*; op. cit. p. 309. *S. bigranularis* from Vesulian; LAMBERT (186) p. 488: BENOIST (31) p. 4. *S. camarensis*; CHOIFFAT (62) p. 184. *S. denudatus*; KILIAN & LORY (170) p. 56. *S. michelinii*; BENOIST (31) p. 4: LAMBERT (186) p. 488. *S. serratus*; BENOIST (31) p. 4: compared with *S. perlatus*; LAMBERT (186) p. 488.
- Stomopneustes*; GREGORY in BATHER (19) p. 313.
- †*Stomoporus*; op. cit. p. 323.
- Streptocidarinae*, n. sub-fam. of *Cidaridae*; LAMBERT (187) p. 53.
- Strongylocentrotidae*, diagnosis; GREGORY in BATHER (19) p. 313.
- Strongylocentrotus*; loc. cit. *S. sp.* nondescri.; CHUN (63) p. 158. *S. albus*, literature; MEISSNER (229) p. 8: microstructure of spine; HESSE (159) pp. 242, 245. *S. armiger*, ditto; HESSE (159) pp. 238, 245, pl. xii. *S. bullatus*, measurements of 1 specimen; MEISSNER (229) p. 9. *S. droebachiensis*; DOEDERLEIN (93) p. 196: HARTLAUB (153) pp. 172, 180, 185, 186: NORDGAARD (245) p. 8: †KNIPOVICH (176): †REKSTAD (280): microstructure of spine; HESSE (159) p. 243: food for foxes; LUCAS (208) p. 126. *S. franciscanus*, artificial parthenogenesis; LOEB (201). *S. gibbosus*, literature; MEISSNER (229) p. 9. *S. lividus*, see II, F, viii; VERNON (337, 338): †SCALIA (295) p. 9: in crowds but not boring; BEAUMONT (24) pp. 755, 756: galvanotaxis of larva; CARLGREN (56) p. 470: host of Copepod; GIESBRECHT (129) p. 201: microstructure of spine; HESSE (159) pp. 240, 243, pl. xii: parthenogenesis; VIGUIER (343). *S. purpuratus*, artificial parthenogenesis; LOEB (201): microstructure of spine; HESSE (159) p. 243. *S. tuberculatus*, ditto; HESSE (159) pp. 240, 245.
- Struderia*; GREGORY in BATHER (19) p. 321.
- †*Taxophyma lyonsi*; vide sub *Psammechinus*.

- Temnechinæ*, nov. sub-tribe of *Orthoporinae*; LAMBERT (187) p. 54.
Temnechinus; GREGORY in BATHER (19) p. 312.
+*Temnocidaris*; op. cit. p. 302. *T. danica*; GRÖNWALL (143) p. 71.
Temnopleuridae, diagnosis, divided into subfam. *Glyphocyphinae*,
Ortholophinae, *Temnopleurinae*; GREGORY in BATHER (19) p. 312.
Temnopleurinae, diagnosis; loc. cit.
Temnopleurus; GREGORY in BATHER (19) p. 312, fig. xxxii. *T. reynaudi*
(p. 281), *T. toreumaticus*, habitat, distrib., colour variation, measure-
ments of different sized specimens (p. 280); BEDFORD (25).
Tetracidarinae, n. sub-fam. of *Cidaridae*; LAMBERT (187) p. 53.
+*Tetracidarialis*; GREGORY in BATHER (19) p. 303: not an Archaeocidarid
but a Cidarid; LAMBERT (187) p. 53.
Tetraplacida, rejected (see general paragraph, supra); loc. cit.
Thegaster; GREGORY in BATHER (19) p. 317.
+*Tholaster*; GREGORY in BATHER (19) p. 321.
+*Thylechinus*; GREGORY in BATHER (19) p. 310.
+*Tiarechinidae*, diagnosis; GREGORY in BATHER (19) p. 305.
+*Tiarechinus*, discussed; loc. cit. and fig. xviii.
+*Tiaridæ*, distinguished from *Eodiadema*; LAMBERT (187) p. 35.
Tiarinae, n. sub-fam. of *Diadematidae*, with tribes *Hemicidarinae*,
Eodiademinæ, *Pseudosaleninæ*, *Pseudodiademinæ*, *Diplopodinæ* and
Glyphocyphinae; LAMBERT (187) p. 53.
+*Tiaris* Quenst., maintained as sub-genus of *Gymnocidaris*, with genotype
Hemicidaris quenstedti Merian; comprises also *T. scolopendra* and all
claviform spines wrongly attributed to *Hemicidaris crenularis*;
LAMBERT (186) p. 483.
+*Tiaromma carthusianum*; KILIAN & LORY (170) p. 56.
+*Toxaster*; GREGORY in BATHER (19) p. 322. *T. broncoensis*; CHOFFAT
(62) p. 185. *T. collegnoi*; KILIAN & LORY (170) pp. 56, 57: a topo-
type of *Echinospatagus leymeriei* Cott., which is a local var. only,
differences from type noted; LORIOL (207) p. 58, pl. vi. *T. complan-
natus*; BAUMBERGER & MOULIN (23) p. 159: DOUXAMI (95) p. 419:
LEBEDEW (192) p. 15: (=retusus); TOBLER (329) p. 145. *T. cor-
vensis*; CHOFFAT (62) p. 185. *T. gibbus*; RIAZ (281) p. 766. *T.
granosus*; BAUMBERGER & MOULIN (23) pp. 171, 200. *T. radula*;
FICHEUR (108) p. 565. *T. retusus*; KILIAN & LORY (170) p. 48:
Lam., name restored in place of *Echinospatagus cordiformis*, Barre-
mian of La Turbie; RIAZ (281) p. 766: vide etiam *T. complanatus*.
T. subugensis; CHOFFAT (62) p. 185. *T. villei*; FICHEUR (108) p. 573.
+*Toxobrissus lonigensis*; OPPENHEIM (251) p. 112.
Toxopneustes; GREGORY in BATHER (19) p. 313: key to French spp.;
ACLOQUE (1) p. 464. *T. droebachiensis* and *T. lividus*, vide sub
Strongylocentrotus. *T. pileolus*, microstructure of spine; HESSE (159)
p. 244. *T. præcursor*, n. sp., Lower Miocene of San Julian and Shell
Gap (Upper Rio Chico), S. Patagonia; ORTMANN (255) p. 369. *T.
variegatus*; CONANT (71): DUERDEN (100) p. 613 and (101) p. 620:
microstructure of spine; HESSE (159) p. 244: breeding period;
WILSON (355) p. 351.
+*Trachyaster archiaci*; FOURTAU (116) p. 481.
+*Trematopygus*; GREGORY in BATHER (19) p. 320.
+*Triadocularis*, relations to *Eotiaris* (p. 40), *T. liagora*, restr., vide *Eoci-
daris larbei* (p. 39); LAMBERT (187).
Trigonocidaris; GREGORY in BATHER (19) p. 312. *T.*, sp.; ANDERSON
(11) p. 5.
Triplacida, rejected (see general paragraph supra); LAMBERT (187) p. 53.
+*Triplacidia*; GREGORY in BATHER (19) p. 310.
Triplechinæ A. Ag.=*Triplechinidas* A. Ag., reduced to sub-tribe of
Oligoporinae; LAMBERT (187) p. 54.

- Triplechinidae*, diagnosis; GREGORY in BATHER (19) p. 313.
Tripeustes, incl. *Hipponeüs*; GREGORY in BATHER (19) p. 313.
Tritylus excavatus, literature; MEISSNER (229) p. 14.
Trochilosominae Bather [sic! i.e. nom. mut. pro *Leiosominae*, q.v. in Zool. Rec. 1897], a sub-tribe of *Polyoporinae*; LAMBERT (187) p. 55.
†*Trochodiadema*, n. g. of *Diadematidae* allied to *Pseudodiadema* (p. 70), with genotype *T. abramense*, n. sp., Turonian, Portugal, type at Direct. trav. geol. Lisbon; LORIOL (207) p. 71, pl. vii. *T. abramense* and *T. ouremense*; CHOFAT (62) p. 166, 193.
†*Tuberaster*; GREGORY in BATHER (19) p. 323.
Tylocidaris; GREGORY in BATHER (19) p. 302. †*T. sornigeti*; KILIAN & LORY (170) p. 60.
Typecidaris; GREGORY in BATHER (19) p. 302.
Urechinus; GREGORY in BATHER (19) p. 321.
†*Vologenia*; GREGORY in BATHER (19) p. 321.
†*Xenocidaris*; GREGORY in BATHER (19) p. 302. *X. clavigera*, micro-structure of spine; HESSE (159) p. 212.
†*Zeugopleurus*; GREGORY in BATHER (19) p. 312, fig. xxxi. *Z. rovei*, n. sp., Senonian of Kent, descr. in 1889 as young *Z. costulatus*, cotypes in Brit. Mus. and Rowe coll., *Z. costulatus* as restr. known only from Chalk Marl, Sussex; GREGORY (137): as zonal fossil; ROWE (288) p. 300.

(D.)—ASTEROIDEA.

Asteroidea, as sub-class of *Stelleroidea* (vide iv, A), general account of structure, diagnosis, rejection of the Orders *Palaeasteroidea* and *Euasteroidea*, criticism of Stuertz's previous classifications of Palaeozoic *Ast.*, and arrangement of all in Sladen's two Orders, *Phanerozonia* and *Cryptozonia* (q.v. infra) rediagnosed in extended sense; GREGORY in BATHER (19) p. 239 et seqq. Bases of classification of Palaeozoic *Ast.*, arranged under the headings *Enocrinasteriae-Phanerozonia*, *Enocrinasteriae-Cryptozonia*, *Eustelleridae-Phanerozonia*, and *Eustelleridae-Cryptozonia*; STUERTZ (325) pp. 206–210.

- Acantharchaster*; GREGORY in BATHER (19) p. 251.
Acanthaster; op. cit. p. 258.
Acanthasterinae, diagnosis; loc. cit.
Amphiaster; GREGORY in BATHER (19) p. 254.
Anasterias; op. cit. p. 258.
Anthenea; op. cit. p. 253. *A. flavescens*; BEDFORD (25) p. 295.
Antheneidae, diagnosis; GREGORY in BATHER (19) p. 253.
Anthenoidea; loc. cit.
Aphroditaster; GREGORY in BATHER (19) p. 251.
Archaster; loc. cit. *Archaster* [sic], sp., original photograph; DAVENPORT (80) fig. 183. *A. typicus*, habitat, distrib., variations, anus central, measurements; BEDFORD (25) p. 289.
†*Archasterias*; GREGORY in BATHER (19) p. 250.
Archasteridae, diagnosis, divided into sub-fam. *Pararchasterinae*, *Plutonasterinae*, *Pseudarchasterinae*, *Archasterinae*; op. cit. p. 251.
Archasterinae, diagnosis; loc. cit.
†*Argaster*; GREGORY in BATHER (19) p. 250.
Arthraster; op. cit. p. 255.
†*Aspidosoma*, *A. petalooides* accepted as provisional genotype; op. cit. p. 250.
†*Aspidosomatidae*, diagnosis; loc. cit.
Asteracanthion, vide *Asterias*.

Asteracanthium distichum Brandt, from White Sea is *Asterias rubens*; LUDWIG (210) p. 488.

Asterias [incl. *Asteracanthion*]; GREGORY in BATHER (19) p. 258: (sub *Asteracanthion*) key to French spp.; ACLOQUE (1) p. 458: key to Arctic spp.; DOEDERLEIN (93) p. 197: key to Belgian spp.; LAMEERE (188) p. 34. A. sp., Bouvet Id.; CHUN (63) p. 492. *A. alboverrucosa* Brandt, is not *Crossaster papposus* but *Solaster endeca*; LUDWIG (210) p. 464. +*A. antiqua*, discussed (vide *Hiseringaster*); STUERTZ (325) p. 216. *A. catuschatica*, incl. *A. acervata*, geogr. and bathymetric distrib., habitat (p. 485). *A. cribaria*, distrib. (p. 482); LUDWIG (210). +*A. dubium*, Wyoming; LOGAN (205) p. 130, pl. xxv. *A. endeca* var. *decentradiata* Brandt = *Crossaster vancouverensis* de Lor.; LUDWIG (210) p. 466. *A. forbesi*, artificial parthenogenesis; LOEB (202): growth and food supply; MEAD (228). *A. glacialis*; ALLEN & TODD (7) p. 187; LUDWIG (210) p. 480; NORDGAARD (245) p. 8: galvanotaxis of larva; CARLGREN (56) p. 475: no galvanotaxis in adult; NAOEL (239) p. 337. *A. groenlandica*, redescri., measurements, probably incl. *A. spitzbergensis* and *A. disticha*, figures of thick- and thin-spined examples; DOEDERLEIN (93) p. 202, pls. iv, v, vi: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 482. *A. hyperborea*, redescri., measurements, one young, perhaps = *A. muelleri* var. *floccosa*; DOEDERLEIN (93) p. 198, pls. iv, v: incl. *A. normani* as young, measurements, now first found at Spitzbergen; LUDWIG (210) p. 484. +*A. impressae*; HUENE (166) p. 351. +*A. jurensis*; loc. cit.: KOBY (177) p. 200. *A. lincki* (incl. *A. stellionura* and *A. gunneri*), redescri., measurements, variations; DOEDERLEIN (93) p. 200, pl. iv: geogr. and bathymetric distrib., habitat, colour in life; LUDWIG (210) p. 486. *A. müllerii*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 481. *A. panopla*; KNIPOVICH (175) p. 452: redescri., measurements; DOEDERLEIN (93) p. 204, pls. iv, v: geogr. and bathymetric distrib., habitat, colour in life; LUDWIG (210) p. 486. *A. polaris*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 485. *A. rubens*; ALLEN & TODD (7) p. 187; LAMEERE (189) p. 21: NORDGAARD (245) p. 8: see II, f, viii; GIARD (127) & (128) p. 763: see II, c, iii; QUINTON (275): copper; DUBOIS (99): host of Copepod; GIESBRECHT (129) p. 201: pseudohaemal and water-vascular systems and axial organ; BATHER (19) p. 25, fig. xxi: described as typical of *Ast.* structure; GREGORY in BATHER (19) p. 241 et seqq., figg. i-iv: young, with regular rows of spines and two regenerating arms; DOEDERLEIN (93) p. 198, pl. ix: incl. *Asteracanthium distichum* Brandt, geogr. and bathymetric distrib.; LUDWIG (210) p. 488. *A. spitzbergensis*; LUDWIG (210) p. 484. *A. stellionura*; KNIPOVICH (175) p. 452: NORDGAARD (246) p. 24. *A. tenuispina*, multiple madreporites; WAITE (345). *A. vulgaris* as typical Echinoderm, habits, development, and structure, popular; DAVENPORT (80) p. 192: regeneration; KING (171).

Asteriidae, diagnosis; GREGORY in BATHER (19) p. 258.

Asterina [vide etiam *Asteriscus*]; op. cit. p. 254. *A. sp.*; BEDFORD (25) p. 298. *A. gibbosa*, ontogeny; BATHER (19) p. 13, figg. vi, xii: larval organogeny; MACBRIDE (214). *A. regularis*; BENHAM (30).

Asterinidae, difficulty of classifying in either *Crypto-* or *Phanero-zonia*, relations to fossil forms; STUERTZ (325) p. 210: diagnosis, divided into sub-fam. *Ganeriinae*, *Asterininae*, and *Palmipedinas*; GREGORY in BATHER (19) p. 254.

Asterininae, diagnosis; loc. cit.

Asteriscus, key to French spp.; ACLOQUE (1) p. 460.

Asterodiscus; GREGORY in BATHER (19) p. 254.

Asterodon; op. cit. p. 253.

Asteropnis; op. cit. p. 254.

- Astrella*; GREGORY in BATHER (19) p. 252.
Astrogonium; op. cit. p. 253: key to French spp.; ACLOQUE (1) p. 460.
A. abnormalis; BENHAM (30).
Astropecten; GREGORY in BATHER (19) p. 252, fig. vii: key to French spp.; ACLOQUE (1) p. 460: key to Belgian spp.; LAMEERE (188) p. 34. *A. irregularis*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 453. *A. javanicus*, n. var. *malaccanus*, intermediate between *A. javanicus* and *A. andersoni*, Malacca, 2 fms., polian vesicles (p. 291), *A. pleiacanthus*, n. sp., 1-3 fms., Singapore, allied to *A. aurantiacus* (p. 292, pl. xxiv); BEDFORD (25).
Astropectinidae, diagnosis, divided into sub-fammm. *Astropectininae* and *Luidiinae*; GREGORY in BATHER (19) p. 252.
Astropectininae, diagnosis; loc. cit.
Bathybiaster; loc. cit. *B.* sp., Bouvet Id.; CHUN (63) p. 492. *B. pallidus*, geogr. and bathymetric distrib.; LUDWIG (210) p. 455.
†*Bdellacoma*, removed from *Palaeocomidae*; GREGORY in BATHER (19) p. 254.
Benthaster; op. cit. p. 257.
Benthopecten; op. cit. p. 251.
Blakiaster, in *Archasteridae* (p. 251), incl. *Leptoptychaster*, and placed in *Astropectininae* (p. 252); GREGORY in BATHER (19).
Brisinga; op. cit. p. 259, fig. v. *B.* sp., Bouvet Id. (p. 492), Nias Channel (p. 362); CHUN (63). *B. coronata*; LUDWIG (210) p. 488.
Brisingaster; GREGORY in BATHER (19) p. 259.
Brisingidae, diagnosis, systematic position discussed; op. cit. p. 258.
†*Callaster*; op. cit. pp. 253, 259.
Calliderma; op. cit. p. 253. †*C. latum*; DIBLEY (92) p. 493.
Calvasterias; GREGORY in BATHER (19) p. 258.
Calycaster; op. cit. p. 255.
Calyptaster; op. cit. p. 257.
Caulaster; op. cit. p. 251.
Chaetaster; op. cit. p. 255: key to French spp.; ACLOQUE (1) p. 459.
Chaetasterinae, diagnosis; GREGORY in BATHER (19) p. 255.
Cheiraster; op. cit. p. 251.
†*Cheiroptaster*; op. cit. p. 257.
†*Cheiroptasterinae*, diagnosis; op. cit. p. 256.
Chitonaster; GREGORY in BATHER (19) p. 253.
Choriaster; op. cit. p. 254.
Cnemidaster; op. cit. p. 255.
†*Coelaster*; GREGORY in BATHER (19) p. 259.
Coelasterias; op. cit. p. 255.
Colaster; op. cit. p. 259.
†*Compeaster*, discussed; op. cit. p. 255.
Comptonia; GREGORY in BATHER (19) p. 253.
Coronaster; op. cit. p. 258.
Coscinasterias; op. cit. p. 258.
Cosmasterias; loc. cit.
Craspidaster; op. cit. p. 252. *C. glauconotus*, n. sp., 1-3 fms., Malacca; BEDFORD (25) p. 290, pl. xxiv.
Grenaster Perrier; GREGORY in BATHER (19) p. 251. †*C. cf. laevis*, marginals only; OPPENHEIM (251) p. 79, pl. xi. †*C. prisca*; GREPPIN (138) p. 192.
Cribrella sanguinolenta; DOEDERLEIN (93) p. 212: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 472.
†*Cribrellites*; GREGORY in BATHER (19) p. 259.
Crossaster; op. cit. p. 256: key to Belgian spp.; LAMEERE (186) p. 34. *C. papporus*, incl. *C. affinis*, geogr. and bathymetric distrib., habitat, number of arms; LUDWIG (210) p. 460.

- Cryptaster*; GREGORY in BATHER (19) p. 257.
- Cryptozonia*, Order, diagnosis, extended to Palaeozoic Ast., divided into families, *Palaeocomidae*, *Lepidasteridae*, *Tropidasteridae*, *Linckidae*, *Stichasteridae*, *Solasteridae*, *Korethrasteridae*, *Pterasteridae*, *Palasteriscidae*, *Echinasteridae*, *Heliasteridae*, *Pedicellasteridae*, *Asteridae*, and *Briisingidae*; op. cit. p. 254 et seqq.: see also STUERTZ (325) general paragraph, supra.
- Ctenaster*; GREGORY in BATHER (19) p. 256.
- Ctenodiscinae*, diagnosis, cibriform organs; op. cit. p. 251.
- Ctenodiscus*, loc. cit. *C. crispatus*, N. Atlantic and N. Pacific, including *C. krausei* from Behring Sea, Ludwig having been misled by faulty description of Duncan and Sladen, measurements; DOEDERLEIN (93) p. 221, pl. ix: incl. *C. krausei*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 450.
- Culcita*; GREGORY in BATHER (19) p. 254, fig. vi. *C. sp.*, Diego Garcia; CHUN (63) p. 415. *C. novae guineae*, var. *arenosa*, variation of shape with mode of preserving; BEDFORD (25) p. 296.
- †*Cupulaster*; GREGORY in BATHER (19) p. 259.
- Cycethra*; op. cit. p. 254.
- Dermasterias*; loc. cit.
- Dictyaster*; GREGORY in BATHER (19) p. 258.
- Diplasterias*; loc. cit.
- Dipsacaster*; op. cit. p. 252. *D. sladeni*; CHUN (63) p. 491.
- Disasterina*; GREGORY in BATHER (19) p. 254.
- Dytaster*; op. cit. p. 251. *D. agassizi* Perr. nom. nud. 4900 metres, off C. Finisterre; RICHARD (282) p. 76.
- Dorigona*, incl. *Nymphaster*; GREGORY in BATHER (19) p. 253.
- Echinaster*; op. cit. p. 258: key to French spp.; ACLOQUE (1) p. 459. *E. roseus*, no galvanotaxis in adult; NAGEL (239) p. 337. *E. sanguinolentus*, host of Copepod; GIESBRECHT (129) p. 201. *E. scrobiculatus*, distrib.; LUDWIG (210) p. 476.
- †*Echinasterella*; GREGORY in BATHER (19) p. 257.
- †*Echinasterias*, n. g., with genotype *E. spinosus*, n. sp., Lower Devon., Bundenbach, referred to *Eustelleridae-Cryptozonia*; STUERTZ (325) p. 230.
- Echinasteridae*, diagnosis, divided into sub-fam. *Acanthasterinae*, *Mithrodiniae*, *Echinasterinae*, and *Valvasterinae*; GREGORY in BATHER (19) p. 257.
- Echinasterinae*, diagnosis; op. cit. p. 258.
- †*Echinodiscus*, n. g. (p. 231) [nom. preocc. Agassiz et Worthen], with genotype *E. multidactylus*, n. sp., Lower Devon., Bundenbach, referred to *Eustelleridae-Cryptozonia*; STUERTZ (325) p. 232, pl. iii.
- †*Echinostella*, n. g. (p. 233) with genotype *E. traquairi*, n. sp., Lower Devon., Bundenbach, referred to *Palaeo-Eustelleridae-Cryptozonia-Echinasteridae*; op. cit. p. 234, pls. iii, iv.
- Encrinasteriae*; STUERTZ (325), see general paragraph, supra.
- Euasteroidea*, rejected as systematic conception; GREGORY in BATHER (19) p. 249.
- Eustelleridae*; STUERTZ (325), see general paragraph, supra.
- Ferdina*; GREGORY in BATHER (19) p. 255.
- Flexaster*; op. cit. p. 257.
- Freyella*; op. cit. p. 259. *F. edwardsi* Perr. nom. nud., 4020 metres between Portugal and Azores; RICHARD (282) p. 76.
- Fromia*; GREGORY in BATHER (19) p. 255.
- Ganeria*; op. cit. p. 254.
- Gasterinae*, diagnosis; loc. cit.
- Gastraster*; GREGORY in BATHER (19) p. 258.
- Gnathaster*, vide *Odontaster*. *G. (?)*, sp. nondescript. *Agulhas* (p. 491), *G.*, sp., Bouvet Id. (p. 492); Cf.

- Goniaster*; GREGORY in BATHER (19) p. 253. †*G. mammillatus*; CLARK (66) p. 339. †*G. quinqueloba*; DEECKE (82) p. 71.
Goniodiscinae, diagnosis; GREGORY in BATHER (19) p. 253.
Goniasterus; loc. cit. *G. articulatus*, incl. *Pentaceros granulosus* Gray; BEDFORD (25) p. 294.
Goniodon; GREGORY in BATHER (19) p. 253.
Gonipecten; op. cit. p. 251.
Gymnasteria; op. cit. p. 254.
Gymnasteridae, diagnosis; loc. cit.
Gymnobrisinga; GREGORY in BATHER (19) p. 259.
†*Helianthaster*, redescr. and referred to *Helasteridae*; op. cit. p. 258.
†*Helianthasterinae*, diagnosis; loc. cit.
Helaster; loc. cit. *H. cumingi*, multiplication of rays compared with *Pycnopodia*; RITTER & CROCKER (283) p. 249.
Helasteridae, diagnosis, divided into sub-fam. *Helianthasterinae*, *Helasterinae*; GREGORY in BATHER (19) p. 258.
Helasterinae, diagnosis; loc. cit.
Henricia, incl. *Cribrella*; loc. cit. *H. oculata*, syn. of *Cribrella sanguinolenta*, q.v.; LUDWIG (210).
Hexaster, not valid; DOEDERLEIN (93) p. 217. *H. obscurus*; RICHARD (282) p. 76, figg. 24, 25: is *Pteraster*; DOEDERLEIN (93) p. 217: incl. *P. hexactis*, distrib.; LUDWIG (210) p. 468.
Hippasterias; GREGORY in BATHER (19) p. 253, fig. ix. *H. phrygiana*; DOEDERLEIN (93) p. 218: HARTLAUB (153) p. 191: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 457.
†*Hisingaster*, n. g. with genotype *Asterias antiqua* [preocc. *Lindstromaster*] referred to *Phanerozonia*; STUERTZ (325) pp. 216, 225.
Hopaster; GREGORY in BATHER (19) p. 253.
†*Hudsonaster*, n. g. with genotype *Palasterina rugosa*; STUERTZ (325) p. 225.
Hydrasterias; GREGORY in BATHER (19) p. 258.
Hymenaster; op. cit. p. 257, fig. xii. *H. giboryi* Perr. nom. nud., 4261 metres, near Azores; RICHARD (282) p. 77. *H. pellucidus*; DOEDERLEIN (93) p. 218: KNIPOVICH (175) p. 458; geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 472.
Hymenodiscus; GREGORY in BATHER (19) p. 259.
Hyphalaster; op. cit. p. 251. *H. valdiviae* n. sp., 4990 metres, Gulf of Guinea, distinguished from *H. parfaiti* and figd.; LUDWIG in CHUN (63) p. 490.
Iconaster; GREGORY in BATHER (19) p. 253. *I. longimanus*, Malacca; BEDFORD (25) p. 293.
Ilyaster mirabilis, distrib.; LUDWIG (210) p. 456.
Isaster; GREGORY in BATHER (19) p. 251.
†*Jaekelaster* n. g., with genotype *J. petaliformis* n. sp., Lower Devon., Bundenbach, referred to *Eustelleridae-Cryptozonia*; STUERTZ (325) p. 235, pl. iv.
Korethraster; GREGORY in BATHER (19) p. 256. *K. hispidus*, distrib.; LUDWIG (210) p. 468.
Korethrasteridae, diagnosis; GREGORY in BATHER (19) p. 256.
Labidiaster; op. cit. p. 259. *L. radiosus*, multiplication of rays compared with *Pycnopodia*; RITTER & CROCKER (283) p. 248.
Lasiaster; GREGORY in BATHER (19) p. 254. *L. hispidus*, possibly incl. *L. villosus* Sladen, geogr. and bathymetric distrib.; LUDWIG (210) p. 460.
Lebrunaster; GREGORY in BATHER (19) p. 254.
Leiaster; op. cit. p. 255.
†*Lepidaster*; loc. cit. & fig. x.
†*Lepidasteridae*, diagnosis; loc. cit.

- Leptaster*; GREGORY in BATHER (19) p. 253.
- Leptasterias*; op. cit. p. 258.
- Leptigonaster*, referred to *Goniociscinae*; op. cit. p. 253.
- Leptoptychaster arcticus*; DOEDERDEIN (93) p. 224: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 452.
- Linckia*; GREGORY in BATHER (19) p. 255. *L.* sp. regeneration; HORST (161) & HÜBRECHT (165). *L. diplax* and *L. miliaris*; ANDREWS (13) p. 116.
- Linckiidae*, diagnosis, divided into sub-fam. *Roemerasterinae*, *Linckiinae*, *Chaetasterinae*, *Metrodirinae*; GREGORY in BATHER (19) p. 255.
- Linckiinae*, diagnosis; loc. cit.
- Lonchotaster*; GREGORY in BATHER (19) p. 251.
- Lophaster*; GREGORY in BATHER (19) p. 256. *L. furcifer*; KNIPOVICH (175) p. 458: geogr. and bathymetric distrib., habitat, large specimen ($R=125$ mm.) from Spitzbergen, colour in life; LUDWIG (210) p. 467.
- †*Loriolaaster*; GREGORY in BATHER (19) p. 257.
- Luidia*; op. cit. p. 252. *L.* sp. (*Bipinnaria asterigera*); BROWNE (49) p. 685. *L.* sp. Bouvet Id.; CHUN (63) p. 492. *L. clathrata*?; DUERDEN (100) p. 613. *L. longispina* (p. 292), *L. maculata*, (p. 293), *L. penangensis*, food, differences from type (p. 292); BEDFORD (25).
- Luidiaster*; GREGORY in BATHER (19) p. 251.
- Luidiinae*, diagnosis; op. cit. p. 252.
- Lytaster*; op. cit. p. 258.
- Mammaster*; op. cit. p. 255.
- Marginaster*; GREGORY in BATHER (19) p. 254.
- Marsipaster*; op. cit. 257.
- Mayraster*; loc. cit.
- Mediaster*; op. cit. p. 253. *M. stellatus*; RICHARD (282) p. 76, fig. 26.
- †*Medusaster*; GREGORY in BATHER (19) p. 259.
- Metopaster*; op. cit. p. 253. *M. mantelli* and *M. parkinsoni*; DIBLEY (92) p. 493.
- Metrodira*; GREGORY in BATHER (19) p. 255.
- Metrodirinae*; loc. cit.
- Mimaster*; GREGORY in BATHER (19) p. 253.
- Mimasterinae*, diagnosis; loc. cit.
- Mitelephaster*; loc. cit.
- Mithrodia*; GREGORY in BATHER (19) p. 258.
- Mithrodiinae*, diagnosis; loc. cit.
- Mitraster*; op. cit. p. 253. *M. hunteri* and *M. rugatus*?; DIBLEY (92) p. 493.
- †*Monaster*; GREGORY in BATHER (19) p. 250.
- Moriaster*; op. cit. p. 252.
- Myzaster*; op. cit. p. 257.
- Narcissia*; op. cit. p. 255.
- Nardoa*; loc. cit. *N. tuberculata*; ANDREWS (13) p. 116.
- Nectria*; GREGORY in BATHER (19) p. 253.
- Neomorphaster*; op. cit. p. 255.
- Neopanthis*; op. cit. p. 254.
- Nidorellia*; loc. cit.
- Nymphaster*, vide *Dorigona*. *N. alcocki*, n. sp., 1469 metres, G. of Aden, figured but not described; LUDWIG in CHUN (63) p. 493. *N. coombii*?; DIBLEY (92) p. 493.
- Odinia*; GREGORY in BATHER (19) p. 259.
- Odontaster*; incl. *Gnathaster*; op. cit. p. 253.
- Ogmaster*; loc. cit.
- Ophidiaster*; op. cit. p. 255: key to French spp.; ACLOQUE (1) p. 459. *O. ludwigi*, n. sp., from Peru, allied to *O. agassisi*, coll. de Loriol; LORIOL (207) p. 78, pl. viii.

- Oreaster*, vide *Pentaceros*.
 †*Palaeaster*; GREGORY in BATHER (19) p. 250.
 †*Palaeasteridae*, diagnosis, divided into sub-famm. *Palaeasterinae* *Xenasterinas*; loc. cit.
 †*Palaeasterina* [vide etiam *Palasterina*]; loc. cit.
 †*Palaeasterinae*, sub-fam. of *Palaeasteridae*, diagnosis (does not inc *Palaeasterina*); loc. cit.
 †*Palaeasterinidae*, diagnosis; loc. cit.
 †*Palaeasteroides*, rejected as systematic conception; op. cit. p. 249.
 †*Palasocoma*; GREGORY in BATHER (19) p. 254.
 †*Palasocomidae*, diagnosis; loc. cit.
 †*Palasonechia*; op. cit. p. 250.
 †*Palascostella*; loc. cit.
 †*Palaeosalaster* n. g. (p. 226), with genotype, *P. gregoryi*, n. sp., L Devon, Bundenbach, referred to *Encrinasteridae-Cryptasterinae*; STRU (325) p. 237, pl. ii.
 †*Palasterina* discussed and diagnosed (pp. 213, 214); *P. fallmanni*, cussed (p. 218) [vide etiam *Pseudopalasterina*]; *P. obtusa*, prob *Urasterella* (p. 216); *P. primaria*, perhaps belongs to *Cryptasterina* (p. 224); *P. rugosa*, discussed (p. 218); *P. stellata*, discussed (p. 225); STUERTZ (325).
 †*Palasteriscidae*, diagnosis, position of madreporite discussed; GRIM in BATHER (19) p. 257.
 †*Palasteriscus*; loc. cit.
Palmipedinae, diagnosis; op. cit. p. 254.
Palmipes; loc. cit.: key to French spp.; ACLOQUE (1) p. 459: kx Belgian spp.; LAMEERE (188) p. 34. *P. rosaceus*; BEDFORD p. 297.
Paragonaster; GREGORY in BATHER (19) p. 253. *P. subtilis* PERR. nud., 4020 metres, betw. Portugal and Azores; RICHARD (282) p. 11.
Pararchaster; GREGORY in BATHER (19) p. 251.
Pararchasterinae, diagnosis; loc. cit.
Patiria; op. cit. p. 254. *P. sp.*; BEDFORD (25) p. 298.
Paulia; GREGORY in BATHER (19) p. 254.
Pectinaster; op. cit. p. 251.
Pectinidiscus n. g. of *Porcellanasteridae*, with genotype *P. annae*, n. 463 metres, Zanzibar, figd. but not descr.; LUDWIG in CHUN p. 494.
Pedicellaster; GREGORY in BATHER (19) p. 258. *P. typicus*, inc *palaeocrystallus* Dunc. & Slad., geogr. and bathymetric dis habitat, now first found at Spitzbergen; LUDWIG (210) p. 476.
Pedicellasteridae, diagnosis; GREGORY in BATHER (19) p. 258.
Pentaceropis; op. cit. p. 254.
Pentaceros, incl. *Oreaster*; loc. cit. *P. granulosus*, vide *Goniaster articulatus*. *O. [i. e. P.] obtusus*; DIBLEY (92) p. 493. *P. reticulata* CONANT (71); DUERDEN (100) p. 613 and (101) p. 620. *P. tenuis* specific characters and their variation, measurements; BEDFORD p. 295.
Pentacerotidae, diagnosis; GREGORY in BATHER (19) p. 253.
Pentagonaster; loc. cit. *P. abyssalis*, n. sp., 2253 metres, Malac figured but not described (p. 493). *P. excellens*, n. sp., 628 m. Somali coast, figd. but not descr. (p. 494); LUDWIG in CHUN *P. granularis*; KNIPOVICH (175) p. 458: geogr. and bathym. distrib., habitat; LUDWIG (210) p. 456. *P. megaloplax*; DIBLEY p. 493.
Pentagonasteridae, diagnosis, divided into sub-famm. *Pentagonasterinae* *Goniodiscinae*, *Mimasterinae*; GREGORY in BATHER (19) p. 253.
Pentagonasterinae; diagnosis; loc. cit.

- Peribolaster*; GREGORY in BATHER (19) p. 256.
Perknaster; op. cit. p. 258.
Persephonaster; op. cit. p. 251.
†*Petraster*; op. cit. p. 250.
Phaneraster; op. cit. p. 253.
Phanerozonia, Order, diagnosis, extension to Palaeozoic Ast., divided into Families, *Palaeasteridae*, *Palaeasterinidae*, *Apidosomatidae*, *Taeniasteridae*, *Archasteridae*, *Porcellanasteridae*, *Astropectinidae*, *Pentagonasteridae*, *Antheneidae*, *Pentacerotidae*, *Gymnasteridae*, *Asterinidae*; GREGORY in BATHER (19) p. 249 et seqq.
Pharia; op. cit. p. 255.
Phataria; loc. cit. *P. unifascialis* from Celebes; LORIOL (207) p. 80.
Pholidaster; GREGORY in BATHER (19) p. 255.
Phoxaster; op. cit. p. 252.
Platasterias; loc. cit.
Plectaster; GREGORY in BATHER (19) p. 258.
†*Plumaster*; op. cit. p. 259.
Plutonaster; op. cit. p. 251. *P. bifrons* probably not Arctic (p. 450), *P. parelii*, incl. *Pseudarchaster tessellatus* var. *arcticus* Sluiter, geogr. and bathymetric distrib., habitat (p. 449); LUDWIG (210).
Plutonasterinae, diagnosis; GREGORY in BATHER (19) p. 251.
Podasterias; op. cit. p. 258.
Polyasterias; loc. cit.
Pontaster; op. cit. p. 251. *P. sp.* Bouvet Id.; CHUN (63) p. 492. *P. hispidus*, 200 in haul, near Colombo; ANDERSON (11) p. 8. *P. tenuispinus*; DOEDERLEIN (93) p. 223; HARTLAUB (153) p. 191: incl. *P. limbatus*, *P. hebitus*, and *P. marionis*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 447.
Porania; GREGORY in BATHER (19) p. 254. *P. sp.* Bouvet Id.; CHUN (63) p. 492.
Poraniomorpha; GREGORY in BATHER (19) p. 254. *P. rosea*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 459.
Porcellanaster; GREGORY in BATHER (19) p. 251, fig. viii.
Porcellanasteridae, diagnosis, divided into sub-fam. *Porcellanasterinae Ctenodiscinae*; loc. cit.
Porcellanasterinae, diagnosis; loc. cit.
Prognaster; op. cit. p. 255. *P. grimaldii*; RICHARD (282) p. 75, fig. 23.
†*Protasteracanthion*; GREGORY in BATHER (19) p. 251.
Pseudarchaster; loc. cit. *P. tessellatus* var. *arcticus* Sluiter, probably = *Plutonaster parelii* var. *longobrachialis* Dan. & Kor.; LUDWIG (210) p. 449.
Pseudarchasterinae, diagnosis; GREGORY in BATHER (19) p. 251.
Pseudaster; loc. cit.
†*Pseudopalasterina*, n. g. with genotype *Palasterina follmanni* Stuertz, which is redescr.; STUERTZ (325) pp. 219, 225.
Psilaster; GREGORY in BATHER (19) p. 252. *P. andromeda*, incl. *P. florae* Verrill, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 454.
Pteraster hexactis, vide *P. et Hexaster obscurus*. *P. militaris*; DOEDERLEIN (93) p. 218: possibly incl. *P. aporus* Ludw., geogr. and bathymetric distrib., habitat, arm forked; LUDWIG (210) p. 469. *P. obscurus*, incl. *P. hexactis*, rediagnosed; measurements compared with *P. pulvillus*, young in brood-chamber, how nourished, adult covered with slime, does not form an independent genus; DOEDERLEIN (93) p. 213, pl. viii. *P. pulvillus*, restricted by removal of *P. obscurus*; op. cit. p. 217, pl. viii: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 470.
Pterasteridae, diagnosis, divided into sub-fam. *Cheiroptasterinas*, *Pterasterinae*, *Pythonasterinae*; GREGORY in BATHER (19) p. 256.

- Pterasterinae*, diagnosis; GREGORY in BATHER (19) p. 257.
Pycnaster; op. cit. p. 253.
Pycnopodia; op. cit. p. 258. *P. helianthoides*, origin and relations of accessory rays; RITTER & CROCKER (283).
Pythonaster; GREGORY in BATHER (19) p. 257.
Pythonasterinae, diagnosis; loc. cit.
Radiaster; op. cit. p. 254.
Remaster; GREGORY in BATHER (19) 256.
Retaster; op. cit. p. 257. *R. cribrosus*, colour, osculum; BEDFORD (25) p. 298. *R. multipes*, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 471.
Rhegaster; GREGORY in BATHER (19) p. 254. *R. tumidus*; KNIPOVICH (175) p. 458: measurements, skeleton of large individual descr., differences from young stages; DOEDERLEIN (93) p. 219, pl. ix: geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 459.
Rhipidaster; GREGORY in BATHER (19) p. 256.
†*Rhopalocoma*; op. cit. p. 257.
†*Roemeraster*; op. cit. p. 255.
†*Roemerasterinae*, diagnosis; loc. cit.
Rosaster; GREGORY in BATHER (19) p. 253.
†*Salteraster*; op. cit. p. 251.
†*Schoenaster*; op. cit. p. 250.
Sclerasterias; op. cit. p. 258.
Smilasterias; loc. cit.
Solaster; op. cit. p. 256, fig. xi: key to French spp.; ACLOQUE (1) p. 459. *S. sp.*; SINITZIN (308). *S. sp.* Bouvet Id., figd.; CHUN (63) p. 492. *S. affinis* is only var. of *S. papposus*; DOEDERLEIN (93) p. 209. *S. endeca*, measurements, variations; loc. cit. and pl. vii: incl. *Asterias alboverrucosa* Brandt, *S. syrtensis* Verrill, and probably *S. intermedius* Sluiter, geogr. and bathymetric distrib., habitat; LUDWIG (210) p. 464. *S. furcifer*; DOEDERLEIN (93) p. 212. *S. glacialis*, distrib.; LUDWIG (210) p. 467. *S. papposus*, endoskeleton; STEWART (318) p. 13: measurements, extensive variations, partly local (p. 205, pl. vi); var. nov. *anglica*, English coasts (p. 207, pl. vi); var. nov. *squamata*, N. Atlantic (p. 208, pl. vi); *S. syrtensis*, new to European waters, differences fr. *S. endeca* (p. 210, pl. vii): DOEDERLEIN (93).
Solasteridae, diagnosis; GREGORY in BATHER (19) p. 256.
†*Sphaeraster* Quenst., referred to *Pentacerotidae*; op. cit. p. 254.
†*Sphaerites* Quenst., referred to *Pentacerotidae*; loc. cit.
Sporasterias; GREGORY in BATHER (19) 258.
Stegmaster; op. cit. p. 254.
Stellaster; op. cit. p. 253. +*S. coombi*; DEECKE (82) p. 42. *S. incertus*, measurements of 12 specimens, black pigment on ventro-lateral plates, parasitic *Thyca*; BEDFORD (25) p. 294.
†*Stenaster*; restr. to *S. salteri*, and excl. *S. pulchellus*; GREGORY in BATHER (19) p. 251.
Stephanaster; op. cit. p. 253.
Steraster; GREGORY in BATHER (19) p. 257.
Stichaster; op. cit. p. 255. *S. albula*, geogr. and bathymetric distrib., habitat, 6-, 3-, and 5-armed specimens (p. 479); *S. arcticus*, distrib. (p. 478); *S. roseus*, geogr. and bathymetric distrib., habitat (p. 477): LUDWIG (210).
Stichasteridae, diagnosis, divided into subfamn. *Stichasterinae* and *Zoroasterinae*; GREGORY in BATHER (19) p. 255.
Stichasterinae, diagnosis; loc. cit.
Styrcaster; op. cit. p. 251. *S. sp.*, 5248 metres, near Cocos Is., text-fig. (p. 288), *S. sp.* nondescr. 2492 metres, Gulf of Guinea, figd. (p. 491); CHUN (63). *S. armatus* Perr. nom-nud., 4900 metres off C. Finisterre;

- S. edwardsi* Perr. nom-nud., 4020 metres betw. Portugal and Azores ;
S. horridus Slad., ibid : RICHARD (282) p. 76.
 †*Taeniaster* ; GREGORY in BATHER (19) p. 251.
 †*Taeniasteridae*, diagnosis ; op. cit. p. 250.
Tarsaster ; op. cit. p. 255.
Temnaster hexactis is syn. of *Pteraster obscurus*, and the genus not
 distinguishable ; DOEDERLEIN (93) p. 216.
Tethaster ; GREGORY in BATHER (19) p. 251.
 †*Tetraaster* ; op. cit. p. 250.
Thoracaster ; op. cit. p. 251.
Toniu ; op. cit. p. 255.
Tremaster ; op. cit. p. 254.
 †*Trentonaster* n. g. with genotype *Palasterina stellata* [preocc. *Schuchertia*]
 referred to *Phanerozonaria* ; STUERTZ (325) p. 225.
 †*Trichasteropsis* ; GREGORY in BATHER (19) p. 250.
 †*Trichotaster* ; op. cit. p. 259.
 †*Tropidaster*, abactinal "keel" due to exposure of ambulacrals ; op. cit.
 p. 255.
 †*Tropidasteridae*, diagnosis ; loc. cit.
Tylaster ; op. cit. p. 254. *T. willei*, distrib. ; LUDWIG (210) p. 459.
Uniphora ; GREGORY in BATHER (19) p. 258.
 †*Urasterella* ; op. cit. p. 251.
Valvaster ; op. cit. p. 258.
Valvasterinae, diagnosis ; loc. cit.
 †*Xenaster* ; GREGORY in BATHER (19) p. 250.
 †*Xenasterinae*, sub-fam. of *Palaeasteridae*, diagnosis ; loc. cit.
Zoroaster ; op. cit. p. 255. *Z. fulgens*, figd. ; CHUN (63) p. 489.
Zoroasterinae, diagnosis ; GREGORY in BATHER (19) p. 255.

(E).—OPHIUROIDEA.

Ophiuroidea as Sub-class of *Stelleroidea* (vide IV, A), diagnosis, and division into Orders, *Lysophiuriae*, *Streptophiuriae*, *Cladophiuriae*, *Zygothiuriae* : GREGORY in BATHER (19) pp. 273-278. Classification of *Oph.*, discussion of Bell's classification, 1892, and Gregory's, 1896 [i.e. 1897], reply to criticisms of Gregory and correction of misstatements, with divisions of Palaeozoic *Oph.* ; STUERTZ (325) p. 177 et seqq. Diagnosis, name, and systematic position of *Ophiuroidea* ; HAMANN (148) pp. 746, 748.

- †*Acoura* ; GREGORY in BATHER (19) p. 278.
 †*Aganaster*, incl. *Ophiopege* ; op. cit. p. 275.
Aganasteridae, as sub-fam. of *Protophiureae*, defined ; STUERTZ (325) p. 203.
Allostichia Haeckel, discussed ; op. cit. p. 194.
Amphiglypha ; GREGORY in BATHER (19) p. 278.
Amphilepis ; loc. cit.
Amphilimna maintained (p. 316), diagnosis, incl. *A. caribea* (p. 319)
 which is perhaps young of *A. olivacea* (p. 318, pl. xlvi) ; VERRILL (341).
Amphiochnida [not n. s.g. as stated, but Verrill 1899] s.g. of *Amphiura*,
 diagnosis (pp. 307, 311, 316, 318), *A. alboviridis*, *A. brachiata*, *A. pilosa*, *A. putnami*, genotype (p. 318) ; VERRILL (341).
Amphiodia, diagnosis (p. 306), key to W. Atlantic spp. (p. 313), *A. atra*,
A. antarctica, *A. andreae*, *A. barbarea*, *A. chilensis*, *A. fissa*, *A. gibbosa*, *A. grisea*, *A. impressa*, *A. integra*, *A. laevia*, *A. luteomaculata* (also as *Ophiocnida*, q.v.), *A. occidentalis*, *A. ochroleuca*, *A. olivacea*, *A. orstedii*, *A. planispina*, *A. pulchella*, *A. repens*, *A. rüessi*, and *A. urtica* (p. 313) ; VERRILL (341).

Amphioplus, diagnosis (p. 306), introduced as n. g. [but is VERRILL 1899] with key to W. Indian spp. (p. 314); *A. abdita* (p. 314); *A. agassizii*, n. sp., 116 fms., W. Indies, based on "Amphiura sp." Lyman (Bull. Mus. Harvard 1, p. 253, pl. v, figg. 64-66, 1883) redescr. (pp. 314, 315); *A. canescens*, *A. cernua* (p. 315); *A. cuneata* (p. 314); *A. dalea* (p. 315); *A. duplicata* (p. 314); *A. glauca*, *A. laevis* (p. 315); *A. macilenta*, *A. nereis* (p. 314); *A. patula* (p. 315); *A. stearnsi*, *A. tumida*, *A. verrilli* (p. 314); VERRILL (341).

Amphipholis; GREGORY in BATHER (19) p. 278: restricted and diagnosed with genotype "A. squamata (or A. elegans)" (p. 306), ditto with genotype *A. januarii* (p. 311), key to W. Atlantic spp. (p. 312); VERRILL (341): restr. with genotype *A. squamata* (= *A. elegans*); VERRILL (342) p. 587. *A. abnormis*, *A. coreae*, *A. depressa*, *A. elegans*, *A. geminata*; VERRILL (341) p. 312. *A. goësi*; loc. cit. and VERRILL (342) p. 587. *A. gracillima*, *A. hastata*, *A. impressa*, *A. kochi*, *A. limbata*, *A. microdiscus*, *A. patagonica*, *A. pugetana*, *A. punctarenae*, *A. squamata*, *A. subtilis*; VERRILL (341) p. 312. *A. tenera*; loc. cit. and VERRILL (342) p. 587. *A. tenuispina*, *A. torelli*, *A. violacea*; VERRILL (341) p. 312.

Amphipsila, diagnosis, with genotype *A. maculata*; VERRILL (341) pp. 333, 348, pl. xlili.

Amphiura; GREGORY in BATHER (19) p. 278: discussed, restricted, and diagnosed, with genotype *A. chiujei*, also divided into sub-genera, and key to W. Atlantic spp. given; VERRILL (341) pp. 305-311: key to French spp.; ACLOQUE (1) p. 456. *A. angularis* (p. 376), *A. atlantica* (p. 311); VERRILL (341). *A. belgicae*, n. sp., 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819. *A. canadensis*, n. sp., G. of St. Lawrence (p. 311), *A. complanata* (p. 309), *A. crassipes* (p. 309), *A. denticulata* (p. 310); VERRILL (341). *A. elegans*; ALLEN & TODD (7) p. 188. *A. eugeniae* (p. 309), *A. exigua*, n. sp., G. of St. Lawrence (p. 311), *A. (Hemilepis) flexuosa* (p. 309), *A. fragilis* (p. 311), *A. grandisquama* (p. 310), *A. incisa* (p. 309), *A. lunaris* (p. 310), *A. otteri*, protective colour (pp. 308, 309), *A. palmeri* (p. 309); VERRILL (341). *A. patula*; CHUN (63) p. 226. *A. polita*, n. sp., 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819. *A. relicta*; KOEHLER (179) pl. xvi. *A. (Hemilepis) semiermis*; VERRILL (341) p. 309. *A. squamata*, original photograph, habits; DAVENPORT (80) fig. 184: host of Copepod; GIESBRECHT (129) p. 201. *A. stimpsoni*; VERRILL (341) p. 310. *A. sundevalli*; loc. cit.: habitat, distrib., large individuals, differences from younger; GRIEG (139) p. 265. *A. tomentosa*; VERRILL (341) p. 376.

Amphuridae, diagnosis; GREGORY in BATHER (19) p. 278.

†*Aspidura*; loc. cit.

Astro-—, vide *Astro*.

Astrochele; GREGORY in BATHER (19) p. 276.

Astrochelidae, diagnosis; VERRILL (341) p. 369.

Astrocladus, n. g., with genotype *Euryale verrucosum* Lam.; loc. cit.

Astroclon; GREGORY in BATHER (19) p. 276.

†*Astrocnida*; loc. cit.

Astrocreas; loc. cit.

Astroodia, diagnosis; VERRILL (341) p. 371.

Astrogeron, n. g., genotype *Ophiogeron supinus* Lym.; op. cit. p. 358.

Astrogomphus; GREGORY in BATHER (19) p. 276.

Astronycidae, diagnosis; loc. cit.: ditto; VERRILL (341) p. 370.

Astronyx; GREGORY in BATHER (19) p. 276: key to French spp.; ACLOQUE (1) p. 457. *A. sp.* nondescr.; CHUN (63) p. 170. *A. lymani*, descr.; VERRILL (341) p. 371, pl. xlili.

Amphiura, supposed intermediate between *Ast.* and *Oph.*; GREGORY in

- BATHER (19) p. 238 [but the facts adduced are the reverse of the actual case]: [*Astrophiura?*] "Neues Ophiuridengenus" 500 metres, Agulhas bank, figured; CHUN (63) p. 488.
- Astrophyton*; GREGORY in BATHER (19) pp. 280, 276, fig. xxxii: history of name; VERRILL (341) p. 368: key to French spp.; ACLOQUE (1) p. 458. A. sp., large individual, Spitzbergen; SCHAUDINN (296) p. 236. A. *laevipelle* syn. of *Euryale aspera* s. str.; LORIOL (207) p. 92. A. *muricatum*; DUERDEN (101) p. 620.
- Astroporpa*; GREGORY in BATHER (19) p. 276.
- Astroschema*; loc. cit. and figg. xxviii, xxix.
- Astroscem[at]idie*, diagnosis; VERRILL (341) p. 370.
- Astrotonma*; GREGORY in BATHER (19) p. 276.
- †*Bundebachia*; op. cit. p. 274: arm-ossicles not divided into ambulacral and adambulacral portions, belongs to *Palaeophiuridae* Greg.; STUERTZ (325) p. 187. B. *grandis*, vide *Palaeophiomyxa*.
- †*Cholaster*; GREGORY in BATHER (19) p. 275.
- Cladophiurae*, diagnosis, divided into Families *Astronycidae*, *Trichasteridae*, and *Gorgonocephalidae*; op. cit. p. 276: discussed as classificatory division; STUERTZ (325) p. 178.
- Coleophiurae* Haeck., discussed; op. cit. p. 193.
- Ctenamphiura*, n. g. of *Amphiuridae* with genotype *C. maxima* (Lym.); VERRILL (341) p. 306.
- †*Eoluidia*; GREGORY in BATHER (19) p. 275.
- †*Eoluididae*, diagnosis; loc. cit.: STUERTZ (325) pp. 197, 203.
- †*Eophiuridae* [err. pro *Eophiuritidae*, melius autem *Eoluidiidae*], as sub-fam. of *Protophiureae*, defined, incl. *Eophiurites* [*Eoluidia*], *Eospondylus*, *Miospondylus*; STUERTZ (325) p. 203.
- †*Eophiurites* nom. nov. pro *Eoluidia* Stuertz, because *Oph.* and not *Ast.* [insufficient reason]; op. cit. p. 190.
- †*Eospondylus*; GREGORY in BATHER (19) p. 275.
- †*Ephippiellum symmetricum* Lomnicki, = *Oph.* arm-ossicles; ANDRUSOV (15).
- †*Eucladia*, systematic position; STUERTZ (325) p. 183: ditto, and *E. johnsoni*, discussed; GREGORY in BATHER (19) p. 275.
- †*Eucladiidae*, diagnosis; loc. cit.: defined, as either "Primitiv-Streptospondyline" or *Palae-Euryalidae*; STUERTZ (325) pp. 198, 204.
- †*Eugaster*; GREGORY in BATHER (19) p. 274. *E. logani* referred to *Ophio-Encrinasteriae*; STUERTZ (325) p. 200.
- Euryale*; GREGORY in BATHER (19) p. 276. *E. aspera* discussed and restricted (p. 91), specimens so named by Müller & Troschel, Lyman, and Studer being referred to *E. studeri*, n. sp., Singapore, characters of young (p. 86, pl. viii); LORIOL (207). *E. verrucosum*, vide sup. *Astrocladus*.
- Euryalidae* restr., diagnosis; VERRILL (341) p. 366.
- Euryalinæ*, n. sub-fam. of *Euryalidae*, for *Euryale*; op. cit. p. 367.
- †*Furcaster*; GREGORY in BATHER (19) p. 275, fig. xxxi: no ventral arm-plates; STUERTZ (325) p. 191.
- Furcasteridæ*, as sub-fam. of *Protophiureae*, defined; op. cit. p. 203.
- †*Geocoma* d'Orb.; GREGORY in BATHER (19) p. 278.
- Gorgonocephalidae*; op. cit. p. 276: diagnosis; VERRILL (341) p. 367.
- Gorgonocephalus*; GREGORY in BATHER (19) p. 276: history of name; VERRILL (341) p. 368. *G. agassizi*, measurements, comparison with other N. European spp.; DOEDERLEIN (93) p. 227, pl. x: distrib., young individual figured, habitat; GRIEG (139) p. 271. *G. eucnemis*; HARTLAUB (153) pp. 177, 187, 190: incl. *G. malmgreni*, measurements and variation; DOEDERLEIN (93) p. 226, pl. x: distrib., young individuals descr. and figd., habitat; GRIEG (139) p. 288. *G. lamareti* (p. 278), and *G. lincki* (p. 277), not Arctic. *greni*, vide *G. eucnemis*.

- Gymnolophus* referred to *Ophiothrichidae*; VERRILL (341) p. 304.
Helianthasteridae, defined, as either "Primitiv-Streptospondyline" or
Palae-Euryalidae; STUERTZ (325) p. 204.
Hemieuryale; GREGORY in BATHER (19) p. 276. *H. pustulata*, perhaps
 incl. *Ophiura cuspidifera* Lam., redescri.; VERRILL (341) p. 363.
Hemieuryalidae, diagnosis; loc. cit.
Hemiglypha; GREGORY in BATHER (19) p. 278.
Hemilepis, s.g. of *Amphiura* [not n. s.-g. as queried in Zool. Rec. 1899,
 but now ascribed to Ljungman 1871]; VERRILL (341) pp. 307, 309.
Hemipholi; GREGORY in BATHER (19) p. 278, fig. xxxiii.
[†]*Lapworthura*; op. cit. p. 275.
[†]*Lapworthuridae*, diagnosis; loc. cit.: as sub-fam. of *Protophiureae*, de-
 fined; STUERTZ (325) pp. 197, 203.
Lutkenia referred to *Ophiothrichidae*; VERRILL (341) p. 304.
[†]*Lysophiuriae*, Order, diagnosis, divided into Families *Protasteridae* and
Palaeophiuriidae; GREGORY in BATHER (19) p. 274: rejected in
 favour of *Ophio-Encrinasteriae*; STUERTZ (325) pp. 184, 195.
[†]*Miospondylus*; GREGORY in BATHER (19) p. 275.
Neoplax; op. cit. p. 276.
[†]*Onychaster*, discussed; op. cit. p. 275: systematic position; STUERTZ
 (325) p. 180.
[†]*Onychasteridae*, diagnosis; GREGORY in BATHER (19) p. 275: as sub-fam.
 of *Protophiureae*, defined; STUERTZ (325) pp. 198, 202.
Ophiacantha; GREGORY in BATHER (19) p. 278: habitat, habits, pro-
 tective adaptation, age-differences (p. 321), key to W. Atlantic spp.
 (p. 323), restricted and diagnosed (p. 330); *O. abyssicola* (pp. 324, 335);
O. aculeata (pp. 323, 335); *O. anomala*, viviparous (pp. 324, 335);
 VERRILL (341). *O. (Ophiectodia) antarctica*, n. sp., partially defined,
 'Belgica' Antarctic Expedition; KOEHLER (180) p. 820. *O. aspera*;
 VERRILL (341) pp. 324, 334. *O. bartletti*, vide *Ophiopora*. *O. biden-
 tata*; DOEDERLEIN (93) p. 225: VERRILL (341) pp. 323, 335: habitat,
 distrib., incl. *O. fraterna* and perhaps *O. nigra*; GRIEG (139) p. 267.
O. cosmica; CHUN (63) p. 170: VERRILL (341) pp. 324, 336, 337. *O.
 crassidens* (pp. 325, 335, 339), *O. cuspidata* (p. 337); VERRILL (341).
O. decora; KOEHLER (179) pl. xvi. *O. enopla* (pp. 324, 335, 338), *O.
 fraterna* (pp. 324, 335), *O. granulifera* (pp. 326, 334), *O. marsupialis*
 (pp. 337, 338), *O. millespina* (pp. 324, 334), *O. normani* (pp. 349, 353),
O. (Ophiectodia) pectinula, n. sp., West Indies (pp. 325, 334, 338, 340,
 342), *O. pentacrinus* (pp. 324, 334), *O. placentigera* (p. 340); VERRILL
 (341). *O. (Ophiolimna) polaris*, n. sp., 'Belgica' Antarctic Expedition;
 KOEHLER (180) p. 820. *O. rosea* (pp. 337, 338), *O. scolopendrica* (p. 332
 [vide *Ophientrema*]), *O. scutata* (pp. 325, 334, 337) descr., variations
 from type (p. 341), *O. segesta* (pp. 325, 335, 340), *O. spectabilis*
 (pp. 325, 335, 338, 339), *O. stellata* (pp. 325, 334); VERRILL (341).
O. troscheli, vide *Ophiacanthes*. *O. vagans*; KOEHLER (179) pl. xviii.
O. valenciennesi (pp. 337-340, 348), *O. varispina* (pp. 326, 334, 339),
O. vepratica (pp. 326, 335, 340); VERRILL (341).
Ophiacanthes, diagnosis (pp. 332, 344), *O. troscheli* (pp. 327, 336-339);
 VERRILL (341).
Ophiacanthidae diagnosed and discussed, incl. *Ophiacantha*, *Ophiomitra*,
Ophiotrema, *Ophiocamar*, *Ophiolebes*, *Ophiothamnus*, *Ophiocopa*, *Ophio-
 chiton*, *Ophiotoma*, and (?) *Ophioblenna*, also *Ophialcea*, *Ophiomitrella*,
Ophiacanthes, *Ophiocalus*, *Ophiolimna*, *Ophiopristis*, *Ophiotreta*,
Ophientrema, *Ophiectodia*, *Ophiopora*, *Amphipsila*, *Ophioplinthaca*,
 also sub-fam. *Ophiochondrinae*; VERRILL (341) p. 319 et seqq.
Ophiactis; GREGORY in BATHER (19) p. 278. *O. asperula*; KOEHLER
 (180) p. 818. *O. krebsii*, distinguished from *O. savignyi* and *O.
 virescens*, colour, habitat, fission; VERRILL (342) p. 586.

- Ophialcea*, diagnosis (p. 331), *O. nuttingii* (pp. 326, 331, 336, 337), *O. rufescens* (p. 331), *O. tuberculosa* (p. 331); VERRILL (341).
- Ophiambix*; GREGORY in BATHER (19) p. 276: referred to *Ophioscolecidae*; VERRILL (341) p. 358.
- Ophiarrachna*; GREGORY in BATHER (19) p. 277.
- Ophiarthrum*; op. cit. p. 278. *O. elegans*; KOEHLER (179) pl. xix.
- Ophidiaster* sp.; ANDREWS (13) p. 117.
- Ophictodia*, diagnosis; VERRILL (341) p. 331. *O. antarctica*, vide sub *Ophiacantha*. *O. enopla* (p. 331); *O. pectinula*; *O. rosea* and *O. spectabilis* (p. 331): VERRILL (341): vide etiam sub *Ophiacantha*.
- Ophientodia*, diagnosis, *O. cuspidata*, *O. pectinula* [= *Ophictodia*, sub *Ophiacantha*], *O. scutata*; VERRILL (341) p. 330.
- Ophientrema*, n. s.-g. of *Ophiacantha*, with genotype *O. scolopendrica*; *O. granulosa*: op. cit. p. 332.
- Ophiernus*; GREGORY in BATHER (19) p. 278.
- Ophioaethiops* referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophioblenna*; GREGORY in BATHER (19) p. 278.
- Ophiobrachiontidae*, n. fam. for *Ophiobrachion uncinatus*; VERRILL (341) p. 366.
- Ophiobyrsa*; GREGORY in BATHER (19) p. 276: referred to *Ophioscoleciae*; VERRILL (341) p. 358. *O. serpens*, vide *Ophiobyrsella*.
- Ophiobyrsella*, n. g., with genotype *Ophiobyrsa serpens* Lym. (p. 358), *O. hystricis* (p. 359); VERRILL (341).
- Ophiocamax*; GREGORY in BATHER (19) p. 278: descr., with key to spp.; VERRILL (341) p. 354. *O. austera* (p. 355, pl. xliii), *O. fasciculata* (p. 355); op. cit. *O. gigas*, n. sp., size alone given, 'Belgica' Arctic Expedition; KOEHLER (180) p. 820. *O. hystrix*, *O. nitrea*; VERRILL (341) p. 355.
- Ophiocampus* referred to *Ophiothrichidae*; op. cit. p. 304.
- Ophiocentrus*; GREGORY in BATHER (19) p. 278.
- Ophioceramis*; loc. cit. and fig. xxiii.
- Ophiochiton*; GREGORY in BATHER (19) p. 278.
- Ophiochondrella*, n. g. (p. 355), with genotype *O. squamosus* (Lym.) (p. 356); VERRILL (341).
- Ophiochondrinæ*, n. sub-fam. of *Ophiacanthidae*, incl. *Ophiochondrus* and *Ophiochondrella*; op. cit. p. 355.
- Ophiochondrus*; GREGORY in BATHER (19) p. 276: emendation of diagnosis; VERRILL (341) p. 356. *O. crassispinus*, specimens referred by Lyman to *O. convolutus* descr.; loc. cit.
- Ophiocytra*; GREGORY in BATHER (19) p. 278.
- Ophiocnemis*; loc. cit.: referred to *Ophiothrichidae*; VERRILL (341) p. 304. *O. cotteauï*, n. sp., coast of Liberia, on gorgonians, types in coll. de Loriot (p. 84, pl. vii); *O. marmorata*, granulation of arms (p. 84), size of dorsal arm-plates (p. 86); *O. venusta*, n. sp., from Singapore, compared with *O. clypeata* and *O. marmorata*, forms link with *Ophiomaza* (p. 81, pl. viii): LORIOT (207).
- Ophiocnida*; GREGORY in BATHER (19) p. 278: discussed (p. 315), reestr. and diagnosed with genotype *O. hispida*, incl. *Ophiocnidella*, with key to spp. (p. 317); VERRILL (341). *O. brachiata*, burrowing; ALLEN & TODD (7) p. 187. *O. echinata*; KOEHLER (179) pl. xvii; VERRILL (341) p. 317. *O. filogranea*, *O. hispida*, *O. loveni*, *O. lutkeni* (also as *Amphiodia* q.v.), *O. scabra*, *O. scabriuscula*, *O. serradia*; VERRILL (341) p. 317.
- Ophiocoeta*; GREGORY in BATHER (19) p. 277.
- Ophiocoma*; op. cit. p. 278: key to French spp.; ACLOQUE (1) p. 456: key to Belgian spp.; LAMEERE (186) p. 33. *O. aethiops*; ANDREWS (13) p. 117: CONANT (71). *O. echinata* spawns from 8 to 10 p.m.; GRAVE (135) p. 85. *O. erinaceus*, endoskeleton; STEWART (318). *O.*

- lubrica*; KOEHLER (179) pl. xx. *O. nigra*; NORDGAARD (245) p. 8: host of Copepod; GIESBRECHT (129) p. 201: distrib.; GRIEG (139) p. 277. *O. pumila*, 6 and 5 rayed; VERRILL (342) p. 583. *O. ritteri*; distinguished from *O. echinata*; op. cit. p. 586. *O. scolopendrina*; ANDREWS (13) p. 117.
- Ophioicomidae*; GREGORY in BATHER (19) p. 278.
- Ophioconis*; GREGORY in BATHER (19) p. 277.
- Ophiocopa*; VERRILL (341) p. 333.
- Ophiocreas*; GREGORY in BATHER (19) p. 276. *O. constrictus*, n. sp., Dusky Sound, N. Z., also Jackson B., type in Otago Mus.; FARQUHAR (107) no fig.
- Ophiocrene*; GREGORY in BATHER (19) p. 276.
- Ophioceten*; op. cit. p. 278. *O. dubium* and *megaloplax*, nomm. nuda 'Belgica' expedition; KOEHLER (180) p. 819. *O. pallidum*; CHUN (63) p. 226. *O. sericeum*; DOEDERLEIN (93) p. 225: habitat, distrib.; GRIEG (139) p. 264.
- Ophiocymbium*; GREGORY in BATHER (19) p. 278.
- Ophiocadera*, diagnosis, and *O. stimpsoni*, redescr.; VERRILL (341) p. 362, pl. xlii.
- Ophioderma*; GREGORY in BATHER (19) p. 277: key to French spp.; ACLOQUE (1) p. 455. +*O. bonnardi*; ENGEL (106) p. 242. *O. longicauda*, no galvanotaxis in adult; NAGEL (239) p. 337. +*O. milleri*; WALTON (346).
- Ophiodermatidae*, diagnosis; GREGORY in BATHER (19) p. 277.
- +*Ophio-Encrinasteriae*, coincides with and precedes *Lysophiuriae* Greg., previously called a 'Family' only because Stuertz followed Zittel's system (p. 184), re-defined as a family (pp. 195, 198), recent allies (p. 199); STUERTZ (325).
- Ophiogeron*; GREGORY in BATHER (19) p. 276, fig. xxvi: discussed, referred to *Ophioscolecidae*; VERRILL (341) p. 357.
- Ophioglypha*; GREGORY in BATHER (19) p. 278, fig. xix: key to Belgian spp.; LAMEERE (186) p. 32. *O. deshayesi*; CHUN (63) p. 170. *O. carinifera*, *doederleini*, *frigida*, and *gelida*, nomm. nuda 'Belgica' expedition; KOEHLER (180) p. 819. *O. hexactis*, with young in brood-pouch, text-figg.; CHUN (63) pp. 253, 254. *O. lacertosa*, host of Copepod; GIESBRECHT (129) p. 201. *O. lymani*; CHUN (63) p. 170. *O. robusta* and *O. sarsi*; DOEDERLEIN (93) p. 224. *O. sinensis* and *O.stellata*; KOEHLER (179) pl. xv.
- Ophiogona*; GREGORY in BATHER (19) p. 277.
- Ophiogymna*; op. cit. p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiohelidae*, n. fam. for *Ophiohelus*; VERRILL (341) p. 361.
- Ophiohelus*; GREGORY in BATHER (19) p. 276: not degenerate but primitive, and as much *Zygocephalidae* as *Streptophiuriae*; STUERTZ (325) p. 185. *O. pellucidus* and *O. umbella*; VERRILL (341) p. 361.
- Ophiolebtes*; GREGORY in BATHER (19) p. 278.
- Ophiolepididae*, diagnosis; loc. cit.
- Ophiolepis*; loc. cit.: key to French spp.; ACLOQUE (1) p. 456. *O. elegans*, breeding period; WILSON (35) p. 350. *O. paucispina*; VERRILL (342) p. 585. *O. rugosa*; KOEHLER (179) pl. xv.
- Ophiolimna*, diagnosis (pp. 333, 345). *O. bairdii* (pp. 327, 335, 340), *O. mixta* (pp. 327, 336, 337, 340) descr. (p. 346); VERRILL (341). *O. polaris*, vide sub *Ophiacantha*.
- Ophiolophus* referred to *Ophiothrichidae*; op. cit. p. 304.
- Ophiomartus* [err. pro *maстus*]; GREGORY in BATHER (19) p. 278.
- Ophiomastic*; loc. cit. *O. luetkeni*, n. sp., Ternate and Cebu; PFEFFER (267).
- Ophiomastus ludwigi*, n. sp., incompletely defined, 'Belgica' Antarctic expedition; KOEHLER (180) p. 819.

- Ophiomara*; GREGORY in BATHER (19) p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304. *O. moerens*; KOEHLER (179) pl. xxi.
- Ophiomitra*; GREGORY in BATHER (19) p. 278: diagnosis (p. 349), key to spp. (p. 350); *O. exigua* referred to *Ophiothamnus* (p. 350); *O. normani* referred to *Ophiacantha* (p. 349); *O. ornata* (p. 350); *O. spinea* (p. 351); *O. valida* (p. 350), Lyman's types were immature (p. 349), redescr. (p. 353); VERRILL (341).
- Ophiomitrella*, diagnosis (pp. 332, 352), *O. cordifera* (p. 352), *O. cornuta* (p. 352), *O. exigua* (p. 353 [also as *Ophiomitra* and *Ophiothamnus*, qq.v.]), *O. globulifera* (p. 352), *O. laevipellis* (pp. 332, 334), redescr., variations from type (p. 343, see also pp. 326, 336, 338, 352); VERRILL (341).
- Ophiomuseum*; GREGORY in BATHER (19) p. 278.
- Ophiomyces*; op. cit. p. 276. *O. fruticosus*, *O. grandis*, *O. mirabilis*, *O. spathifer*; VERRILL (341) p. 360.
- Ophiomyctidae*, n. fam., with sub-fam. *Ophiomyctinae* and *Ophiotholiniae*; op. cit. p. 359.
- Ophiomyctinae*, n. sub-fam. for *Ophiomyces*; op. cit. p. 360.
- Ophiomyxa*; op. cit. p. 361: in two sections; GREGORY in BATHER (19) p. 276: key to French spp.; ACLOQUE (1) p. 457.
- Ophiomyxidae* restr., diagnosis, incl. only *Ophiomyxa* and *Ophiodera*; VERRILL (341) p. 361.
- Ophionema*; GREGORY in BATHER (19) p. 278.
- Ophioneophthys*; loc. cit.
- Ophionereis*; loc. cit.
- Ophiopaepale*; loc. cit.
- †*Ophiopage*, vide *Aganaster*.
- Ophiopeltis*, s.-g. of *Amphiura* [not n. s.-g. as queried in Zool. Rec. 1899, but now ascribed to both Sars and Ljungman]; VERRILL (341) pp. 307, 310.
- Ophiopelta*; GREGORY in BATHER (19) p. 278.
- Ophiopeza*; op. cit. p. 277.
- Ophiopholis*; op. cit. p. 278, fig. xiii. *O. aculeata*; DOEDERLEIN (93) p. 225: spawns from 8 to 10 p.m.; GRAVE (135) p. 85: habitat, distrib., perhaps incl. *O. japonica*, *O. mirabilis*, *O. caryi*, and *O. kennnerlyi* as varr.; GRIEG (139) p. 264.
- Ophiophragmonus* [err. pro *phragmus*]; GREGORY in BATHER (19) p. 278.
- Ophiophyllum*; loc. cit.
- Ophioplax*; op. cit. p. 277.
- Ophiopleura borealis*; KNIPOVICH (175) p. 458: habitat, measurements, distrib.; GRIEG (139) p. 261.
- Ophioplithaca*, n. g. (p. 351), *O. carduus* (p. 351), *O. chelys* (p. 352), *O. dipsacos* (Linn.) genotype (p. 351), *O. incisa* (p. 351), *O. plicata* (p. 351), *O. sarei* (p. 352); VERRILL (341).
- Ophioplithus*; GREGORY in BATHER (19) p. 278. *O. medusa*; CHUN (63) p. 226.
- Ophioplocus*; GREGORY in BATHER (19) p. 278.
- Ophioplus*, diagnosis, *O. tuberculatus*, mimics *Gorgonella*; VERRILL (341) p. 365, pl. xlili.
- Ophiopora*, diagnosis (pp. 333, 345), *O. bartletti* (pp. 327, 335, 337-340, 345); VERRILL (341).
- Ophiopristis*, diagnosis (pp. 333, 347), *O. cervicornis* (pp. 328, 336-340, 347), *O. ensifera* (pp. 328, 336-340, 347), *O. hirsuta* (pp. 328, 336, 338-340, 347); op. cit.
- Ophiopsammium*; GREGORY in BATHER (19) p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiopsis*; GREGORY in BATHER (19) p. 278: distinguished from *Amphiopila* and referred to *Ophiocomidae*; VERRILL (341) p. 348: key to

- French spp.; ACLOQUE (1) p. 457. *O. pantherina*; KOEHLER (179) pl. xvi. *O. riisei*; VERRILL (342) p. 586.
- Ophiopteris*; GREGORY in BATHER (19) p. 278.
- Ophiopteron*; loc. cit.: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiopus*; GREGORY in BATHER (19) p. 278. *O. arcticus*, habitat, distrib.; GRIEG (139) p. 266.
- Ophiopyren*; GREGORY in BATHER (19) p. 277. *O. sp. nondescr.*; CHUN (63) p. 170. *O. regulare*, n. sp., incompletely defined, 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819.
- Ophiopyrgus*; GREGORY in BATHER (19) p. 277, fig. xxv. *O. australis*, n. sp., incompletely defined, 'Belgica' Antarctic Expedition; KOEHLER (180) p. 819.
- Ophiocalus*, diagnosis (p. 331), *O. echinulatus* (pp. 327, 331, 334, 336, 338, 339); VERRILL (341).
- Ophiocistema*; GREGORY in BATHER (19) p. 276: discussed, referred to *Ophioscolecidae*; VERRILL (341) p. 357.
- Ophioscolecidae*; vide *Ophioscolicidae*.
- Ophioscolex*; GREGORY in BATHER (19) p. 276: discussed; VERRILL (341) p. 357. *O. fragilis*, n. sp., off Barbadoes, 82 fms.; op. cit. p. 358, no fig. *O. glacialis*; DOEDERLEIN (93) p. 226: habitat, distrib., measurements, colour, breeding-period; GRIEG (139) p. 268. *O. purpureus*; KNIPOVICH (175) p. 458.
- Ophioscolicidae* [err pro -scolecidae] discussed; VERRILL (341) p. 357.
- Ophiosphaera* referred to *Ophiothrichidae*; op. cit. p. 304.
- Ophiostigma*; GREGORY in BATHER (19) p. 278. *O. isacanthum*, 6 and 5 rayed; VERRILL (342) p. 583.
- Ophioteresia*, said to have a shallow ambulacral groove, open as in *Ast.*; GREGORY in BATHER (19) pp. 238, 262, 270, 274, 275, 276, fig. xiv: the statement denied by MINCHIN and PYCRAFT in Reviews.
- Ophioteresa* [sic, pro -esis] referred to *Protophiurae*; STUERTZ (325) pp. 189, 190.
- Ophiothamnus*; GREGORY in BATHER (19) p. 278. *O. exigua* (p. 328 [vide etiam sub *Ophiomitra* et *Ophiomitrella*]), *O. gracilis* (pp. 328, 334, 340), *O. vicarius* (p. 328); VERRILL (341).
- Ophiotetha*; GREGORY in BATHER (19) p. 278: referred to *Ophiothrichidae*; VERRILL (341) p. 304.
- Ophiotholia*; GREGORY in BATHER (19) p. 276: not degenerate but primitive, and as much *Zygothuriæ* as *Streptophiuræ*; STUERTZ (325) p. 185. *O. supplicans*; VERRILL (341) p. 361.
- Ophiotholidae*, n. sub-fam. for *Ophiotholia*; op. cit. p. 360.
- Ophiothrichidæ*, diagnosis; GREGORY in BATHER (19) p. 278: diagnosis, incl. *Ophiothrix*, *Ophiothela*, *Ophiocnemis*, *Ophiopramnum*, *Ophiomaza*, *Ophiogymna*, *Ophiocampsis*, *Ophiotrichoides* [sic], *Ophiopteron*, *Lutkenia*, *Gymnolophus*, *Ophiomethops*, *Ophiosphaera*, *Ophiolophus*, habitat, distrib.; VERRILL (341) p. 304.
- Ophiothrichoides* referred to *Ophiothrichidae*; loc. cit.
- Ophiothrix*, referred to *Ophiothrichidae*; loc. cit.: GREGORY in BATHER (19) p. 278: key to French spp.; ACLOQUE (1) p. 457: key to Belgian spp.; LAMEERE (188) p. 32. *O. angulata*; VERRILL (342) p. 585. *O. clypeata* is young of *Ophiocnemis marmorata*; LORIOL (207) pp. 83, 86. *O. comata* (pl. xx), *O. diligens* (pl. xxi); KOEHLER (179). *O. fragilis*; ALLEN & TODD (7) p. 187: anatomy described as typical *Oph.*; APSTOLIDÉS (17): galvanotaxis of larva; CARLGREN (56) p. 474: host of Copepod; GIESBRECHT (129) p. 201: vide etiam *Rosula*. *O. innocens* (pls. xviii, xix), *O. insidiosa* (pl. xvii), *O. otiosa* (pl. xix), *O. propinquia* (pls. xviii, xix), *O. speciosa* (pl. xvii); KOEHLER (179). *O. suensonii*; VERRILL (342) p. 585.
- Ophiotrema*; GREGORY in BATHER (19) p. 278: VERRILL (341) p. 350. *O. alberti*; loc. cit.

- Ophiotreta*, diagnosis (pp. 333, 347), *O. lineolata* (pp. 328, 336, 337, 339, 340, 348), *O. placentigera* (p. 348), *O. sertata* (pp. 328, 336-340, 348), *O. valenciennesi* (p. 348); VERRILL (341).
- Ophiotrochus*; GREGORY in BATHER (19) p. 278.
- Ophiozona*; loc. cit. *O. nivea* (p. 306) var. *compta* (p. 306, pl. xliii), variations in oral shields and in dorsal plating; VERRILL (341).
- Ophiura*; GREGORY in BATHER (19) p. 278, figg. xv-xviii and xxiv: key to French spp.; ACLOQUE (1) p. 456. *O. brevicauda*; VERRILL (342) p. 584. *O. brevispinis*, breeding period; WILSON (355) p. 350: incl. *O. serpens* and *O. olivacea*, distrib., bionomics, development from 36 hours to eight days, larva compared with that of *Antedon*; GRAVE (135). *O. ciliaris*; ALLEN & TODD (7) p. 187: descr. as typical *Oph.*; GREGORY in BATHER (19) p. 282 et seqq., figg. xv-xviii. *O. ciliata*, distrib.; GRIEG (139) p. 277. *O. cinerea*; VERRILL (342) p. 585. *O. cupidifera*, vide *Hemieuryale pustulata*; VERRILL (341) p. 363. *O. nodosa*, habitat, distrib., measurements (p. 263), *O. robusta*, habitat, distrib. (p. 262), *O. sarsi*, ditto (p. 261); GRIEG (139). +*O. serrata*; DIBLEY (92) p. 493. *O. stuvitzi* not a Spitzbergen sp.; GRIEG (139) p. 263. +*O. subcylindrica*; BRYDONE (51) p. 12.
- Ophiurella*; GREGORY in BATHER (19) p. 278.
- +*Ophiurina*; op. cit. p. 275.
- +*Ophiurinidae*, diagnosis; loc. cit.: as sub-fam. of *Protophiureae*, defined, incl. *Ophiurina*, *Protaster decheni*, and *Tremataster difficilis*; STUERTZ (325) pp. 196, 200.
- +*Palaeophiomysxa*, n. g. with genotype *Bundenbachia grandis*; STUERTZ (325) p. 202.
- +*Palaeophiomysidae*, as sub-fam. of *Protophiureae*, incl. *Palaeophiomysxa*; loc. cit.
- +*Palaeophiura*; GREGORY in BATHER (19) p. 274.
- +*Palaeophiuridae*; STUERTZ (325) p. 195: diagnosis; GREGORY in BATHER (19) p. 274.
- +*Palaeospondylidae* [*melius Palastropectinidae*] as sub-fam. of *Protophiureae*, defined; STUERTZ (325) p. 201.
- +*Palaeospondylus*, nom. nov. pro *Palastropecten* Stuertz, because *Oph.* and not *Ast.* (p. 190) [an insufficient reason, and in any case preocc. by *Palaeospondylus Traquairi*], removed by arm-structure from *Furcastoridae* (p. 191); STUERTZ (325).
- Palasterina primaeva*, discussed on basis of previous descriptions; op. cit. p. 214.
- Palasterinae* [under this head is a discussion of *Palasterina* M'Coy; it is not clear whether a sub-fam. is intended, or a plural of *Palasterina*, or whether it is a misprint for *Palasterinidae*]; op. cit. p. 213.
- +*Palastropecten*; GREGORY in BATHER (19) p. 275: vide etiam *Palaeospondylus*.
- Paramphiura*, diagnosis; VERRILL (341) p. 306.
- +*Pectinura* Heller non Forbes; GREGORY in BATHER (19) p. 278, fig. xxii.
- Pectinura* Forbes non Heller, *P. gorgonia*; KOEHLER (179) pl. xv.
- Polypholis*; GREGORY in BATHER (19) p. 278.
- +*Protaster*; op. cit. p. 274: Gregory's view as to arm-ossicles confirmed; STUERTZ (325) p. 186. *P.* sp. nondescr. and *P. decheni* var.; DESTINEZ (91). *P. forbesi*; SCHUCHERT (303) p. 280.
- +*Protasteridae* Greg.; STUERTZ (325) p. 195: diagnosis; GREGORY in BATHER (19) p. 274.
- +*Protophiurae* (or -ureae), the conception and name maintained, anatomy discussed (p. 189), diagnosis (p. 196), redefined and divided into sub-families [sic] *Ophiurinidae*, *Palaeospondylidae*, *Palaeophiomysidae*, *Onychasteridae*, *Lapworthiuridae*, *Furcastoridae*, *eridae* (p. 200); STUERTZ (325).

- †*Ptilonaster*; GREGORY in BATHER (19) p. 274: not placed in *Ophio-Eocrinasteriae*; STUERTZ (325) p. 188.
Rosula Linck = *Ophiothrix fragilis*; GREGORY in BATHER (19) p. 260.
Sigesbea; op. cit. p. 276. *S. murrhina*, mimica *Gorgonella*, young figd. VERRILL (341) p. 365, pl. xlvi.
Stella lacertosa Linck = *Ophiura ciliaris*; *S. lumbricalis longicauda* Linck = *Ophioderma longicauda*; GREGORY in BATHER (19) p. 260.
Stenocephalus indicus; KOEHLER (179) pls. xxi, xxii.
Streptophiurae, diagnosis, divided into families *Ophiurinidae*, *Lapworthiidae*, *Eoluididae*, *Onychasteridae*, *Eucladiidae*, and living *Streptophiurae*; GREGORY in BATHER (19) pp. 274-278: discussed as classificatory division, roughly equivalent to *Ophiomyxidae* or *Protophiura* of Stuertz; STUERTZ (325) pp. 178, 180, 196.
†*Sturtevta*; GREGORY in BATHER (19) p. 274.
†*Taeniaster cylindricus* (*Taeniuira* Greg.) and *T. spinosus* referred to *Ophio-Eocrinasteriae*; STUERTZ (325) p. 200.
†*Taeniuira* Greg.; GREGORY in BATHER (19) p. 274: vide etiam *Taeniaster*.
†*Tremataster*; GREGORY in BATHER (19) p. 275.
Trichaster; op. cit. p. 276, fig. xxx. *T. palmiferus*; VERRILL (341) p. 367.
Trichasteridae, diagnosis; GREGORY in BATHER (19) p. 276.
Trichastrinae [sic], diagnosis; VERRILL (341) p. 367.
Zygothiurae, diagnosis, divided into Families *Ophiodermatidae*, *Ophiolepididae*, *Amphiuridae*, *Ophiocomidae*, and *Ophiothrichidae*; GREGORY in BATHER (19) p. 277: discussed as classificatory division; STUERTZ (325) p. 178.
Zygestichia Haeckel, discussed; op. cit. p. 194.

F. CRINOIDEA.

- Crinoidea*, diagnosis (p. 94), history of previous classifications (p. 138), and full systematic arrangement under sub-classes *Mono-* and *Dicyclica* (p. 142 et seqq.); BATHER (19).
Classification of *Inadunata* into *Monocyclica* and *Dicyclica* criticised; JAEKEL (167) p. 372.
†*Abacocrinus*, incl. ? *Carolicr.*, discussed; BATHER (19) p. 165: *A. barrandi*, vide sub *Carolicr.*
†*Abacrinus*, vide *Carpocrinus*.
†*Abrotocrinus*, vide *Scaphocrinus*.
†*Acacocrinus*; BATHER (19) p. 166.
†*Acanthocrinus*; op. cit. p. 201.
†*Achradocrinus*; op. cit. p. 178, fig. xciv: referred to *Gasterocomidae* (p. 155), to *Cyathocrinidae* (p. 158); ZITTEL & EASTMAN (369): former position correct; BATHER in Review.
†*Acrochordocrinus*, incl. *Cyclocr. d'Orb.* (q.v.), *Mespilocr.* Quenst.; BATHER (19) p. 192.
†*Acocrinidae*, diagnosis; op. cit. p. 159.
†*Acocrinus*, discussed, with restoration of *A. amphora*; loc. cit. and fig. lxxiii.
†*Actinocrinidae*, diagnosis, genera discussed; BATHER (19) p. 169.
†*Actinocrinoidea*, Sub-order, diagnosis, divided into families *Actinocrinidae* and *Amphorocrinidae*; loc. cit.
†*Actinocrinus*, incl. *Amphora*, *Blairocr.*, descr.; loc. cit. and fig. lxxxiii. *A. semimultiramosus*, n. sp., Keokuk or Knob Limestone, near Salem, Ind., type in Amer. Mus.; WHITFIELD (350) p. 23, pl. iii.
Actinometra, incl. *Comaster*, *Comatula* pars, *Phanogenia*; BATHER (19)

- p. 196. *A.* sp. indet. *valida*- group, *A. coppingeri*, *A. elongata*, var. and *A. fimbriata*; PFEFFER (267). †*A. formae*, n. sp., Upper Helvetican near Torino, type one dorsal cup in Mus. Geol. Torino; NOELLI (243) p. 28, pl. i. *A. litoralis*, *A. nigra*, *A. novae guineae*, *A. parvicirra*, and *A. pectinata*; PFEFFER (267). †*A. vagnasensis* occurs in Aptian and is perhaps syn. of *Antedon ricordeanus* (q.v.); LORIOL (207) p. 76.
- Actinometridae*, diagnosis; BATHER (19) p. 196.
- †*Adelocrinus*, syn. of *Hexacr.* or *Arthracantha*; op. cit. p. 201. †*A. hyalix*, vide *Perischodomus* (IV, c).
- †*Adunata*, Order, diagnosis, evolution and relations of genera; BATHER (19) p. 155.
- †*Aesiocrinus*; op. cit. p. 180: vide etiam sub *Phialocr.*
- †*Agaricocrinus*, discussed; BATHER (19) p. 167. *A. adamsensis*, rediagnosed, incl. *A. hodgeoni* (p. 183), *A. americanus*, rediagnosed, incl. *A. tuberosus*, *A. bullatus*, *A. pentagonus*, *A. excavatus*, *A. nodosus*, *A. crassus* (?), *A. elegans*, *A. macadamsi*, *A. nodulosus*, *A. splendens*, *A. dissimilis*, *A. gorbyi*, *A. indianensis*, *A. arcuata*, *A. profundus*, *A. turgurium*, *A. iowensis*, *A. keokukensis*, *A. nodulosus*, variations of tegmen figured (p. 184, pls. xviii-xxi); *A. brevis*, rediagnosed, incl. *A. pyramidatus*, *A. stellatus*, *A. corniculus*, *A. geometricus*, *A. fiscellus*, *A. corrugatus* (p. 182); *A. chouteauensis*, rediagnosed, incl. *A. blairi*, *A. germanus*, *A. sampaoni* (p. 182); *A. coreyi*, rediagnosed, incl. *A. springeri* (p. 184); *A. gracilis*, rediagnosed (p. 183); *A. illinoiensis*, rediagnosed (p. 183); *A. inflatus*, rediagnosed, incl. *A. planoconvergens*, *A. decornis*, *A. convevus* (p. 183); KLEM (173). *A. louisianensis*, n. sp., base of Lower Burlington Limestone, Louisiana, Mo.; ROWLEY (289). *A. ornotrema*, rediagnosed, incl. *A. bellatremma* (p. 183); *A. wortensi*, rediagnosed, incl. *A. whitfieldi*, *A. conicus* (p. 184); KLEM (173).
- †*Agassizocrinus*, incl. *Astylocr.*; BATHER (19) p. 181. *A. carbonarius*, now first descr.; BEEDE (28) p. 43, pl. vi.
- †*Agriocrinus*, vide *Hapalocrinus*.
- Alecto*, vide *Antedon*.
- †*Allagecrinus*, diagnosis, *Allagecrinus*, discussed; BATHER (19) p. 151.
- †*Allionia*, syn. of *Antedon*; op. cit. p. 201: discussed; NOELLI (243) p. 15.
- †*Allocrinus*; BATHER (19) p. 162.
- †*Alloprosalocrinus*; op. cit. p. 167.
- †*Amblacrinus*, vide *Coccocrinus*.
- †*Ampheristocrinus*; BATHER (19) p. 173, fig. lxxxviii: diagram; WELLER (348) p. 67: not based on genotype; BATHER in Review. *A. dubius*, n. sp., Niagara, Romeo, Ill.; WELLER (348) p. 67, pl. xiv.
- †*Amphora*, vide *Actinocrinus*.
- †*Amphorocrinidae*, diagnosis; BATHER (19) p. 170.
- †*Amphorocrinus*, discussed; loc. cit.
- †*Ancyrocrinus*, vide *Myrtillocrinus*.
- †*Anisocrinus*, redescr.; BATHER (19) p. 189.
- †*Anomalocrinus*, incl. *Ataxocr.*, discussed; op. cit. p. 146, fig. lviii.
- Antedon*; BURBIDGE (52): incl. *Alecto*, *Comatula*, *Hibernula*, *Phytocr.*, *Solanocr.*, *Hyponome*, and *Geocoma* Fraas; BATHER (19) p. 195, figg. ix, xv, xviii, xix, xxx, xxxiii, xlvi, xlvii, xlxi, liv, lv: generalised section, new diagram; PERRIER (262) p. 250, fig. 183: (s.v. *Comatula*) key to French spp.; ACLOQUE (1) p. 461. *A.* sp., a hundred taken in a bow-net at 175 metres on Gorringe bank; RICHARD (282) p. 78.
- †*A. almerai*, n. sp., Aptian, near Barcelona, allied to *Decameros* (i.e. *A.* *ricordeanus* d'Orb., type in coll. S. Almera; LORIOL (207) p. 74, pl. viii. †*A. angleensis*, a centrodorsal, compared with *A. alticeps*; NOELLI (243) p. 23, pl. i. *A. bifida* (incl. *A. roacea*), distrib., habitat, habits, anat. descr. as typical *Oria*: CUNINOT (76): antennae = et seqq. figg. iv, vi, viii, x), axial ~~

BATHER (19): general anat. recapitulated, anat., histol., and physiol. of joints of arms and cirri; BOSSHARD (44): colour variation, commensal; MALARD (222) p. 28: no galvanotaxis in adult; NAGEL (239) p. 337: origin of gonads in larva; RUSSO (292): endoskeleton; STEWART (318). \dagger *A. burgundiaca*; LISSAJOUS (195) p. 25. \dagger *A. conoidea*; DEECKE (82) p. 71. *A. cumingi*; PFEFFER (287). \dagger *A. depereti*, centrodorsal, differences from type; NOELLI (243) p. 19, pl. i. \dagger *A. depressus* (d'Orb. sub *Decamerus*), notes on the type; LORIOL (207) p. 77. *A. doederleini*, n. sp. of *Palmata* group, from Kagoshima, Japan; op. cit. p. 93, pl. ix. *A. eschrichtii*; DOEDERLEIN (93) p. 228: HÄRTLAUB (153) pp. 177, 180, 187, 190: large at Spitzbergen; SCHAU-DINN (296) p. 236: 102 metres, Sassen B., Spitzbergen; RICHARD (282) p. 78. \dagger *A. fischeri*; BRUNHUBER (50). \dagger *A. fontanieri*, centrodorsal, differences from type; NOELLI (243) p. 17, pl. i. *A. mediterranea*, host of Copepod; GIESBRECHT (129) p. 201. \dagger *A. michelotti*, n. sp., Upper Helvetician near Torino, type at Mus. Geol. Torino (p. 16, pl. i); \dagger *A. minimus*, n. sp., Upper Helvetician near Torino, type 1 dorsal cup in Mus. Geol. Torino (p. 21, pl. i); NOELLI (243). \dagger *A. miocenicus*, vide *A. rhodanicus*; \dagger *A. mystica*; DEECKE (82) p. 71. \dagger *A. nicolai*, n. sp., Upper Helvetician near Torino, type 1 centrodorsal in Mus. Geol. Torino (p. 22, pl. i); \dagger *A. oblitus*, dorsal cup descr., compared with *A. rhodanicus* (p. 13, pl. i); NOELLI (243). *A. oxyacantha*; PFEFFER (287). \dagger *A. paradoxus*; DEECKE (82) p. 71. \dagger *A. paronai*, n. sp., Upper Helvetician near Torino, type 1 centrodorsal in Mus. Geol. Torino (p. 24, pl. i); \dagger *A. pellati*, centrodorsals descr., differences from type (p. 27, pl. i); NOELLI (243). \dagger *A. pertusa*, nom. nud.; CLARK (64) p. 5. *A. phalangium* (pp. 48, 487), *A. prolixa* (p. 487); CHUN (63). \dagger *A. ricordeanus* (d'Orb. sub *Decamerus*) redescr., perhaps incl. *Actinometra vagnasensis*; LORIOL (207) p. 76. \dagger *A. rhodanicus*, discussed, incl. *A. miocenicus*; NOELLI (243) p. 15. *A. rosacea*, vide *A. bifida* and ? *A. mediterranea*. \dagger *A. scrobiculata*; LISSAJOUS (195) p. 24. \dagger *A. stellatus*, n. sp., Upper Helvetician near Torino, type 1 centrodorsal in Mus. Geol. Torino (p. 26, pl. i); \dagger *A. taurinensis*, n. sp., Upper Helvetician, near Torino, types 2 dorsal cups in Mus. Geol. Torino (p. 20, pl. i); NOELLI (243).

Antedonidae, diagnosis, genera discussed; BATHER (19) p. 195.

\dagger *Anthemocrinus*; op. cit. p. 200.

\dagger *Anthocrinus*, vide *Crotalocrinus*.

\dagger *Arocrinus*, vide *Coelocrinus*.

Apocrinidae, diagnosis and genera discussed; BATHER (19) p. 191.

\dagger *Apocrinus*, descr.; loc. cit. and fig. xvii. *A. sp.*; HUENE (166) pp. 355, 362. *A. sp.* indet. (p. 5); *A. elegans* [i.e. *A. elongatus* Miller], doubtful columnals, zone of *Eudesia cardium* and Callovian (p. 4); *A. parkinsoni* [i.e. *A. elegans* Debr. non d'Orb.], fine specimen from Lacrost near Tournus descr. (p. 3, pl. i); LISSAJOUS (195). *A. roseus*?; LEBEDEV (192) p. 16.

\dagger *Aporocrinus*, is an *Agelacrinitid*; BATHER (19) p. 201.

\dagger *Arachnocrinus*; op. cit. p. 175.

\dagger *Archaeocrinus*; op. cit. p. 200, fig. cxxv. *A. depressus*, n. sp., Niagara, various locc. near Chicago; WELLER (348) p. 89, pl. iii: analis not characteristic of genus; BATHER in Review.

\dagger *Aristocrinus*, vide *Dactylocrinus* Quenst.

Articulata Miller (p. 138), Müller (pp. 138, 141), W. & Sp. (p. 139), Zittel (p. 139), grade of *Dendrocrinoidea* (p. 182); BATHER (19).

\dagger *Arthracanthia* incl. *Hystericrinus*; op. cit. p. 158.

— — — — — Birot (35).

" Vol. *A. callosus*, *A. digitatus*, and *A. 18) p. 280.*

- †*Asteria*; BATHER (19) p. 201.
Asterias, syn. of *Antedon* and *Actinometra*; loc. cit.
†*Asteriatites*, syn. of *Antedon*; loc. cit.
†*Asterocrinus* Lyon, vide *Pterocrinus*.
†*Asterocrinus* Münster; BATHER (19) p. 201.
†*Astrios* Troost; op. cit. p. 202.
Astrocoma, syn. of *Antedon* and *Actinometra*; loc. cit.
†*Astrocrinus* Conr., vide *Melocrinus*.
†*Astrocrinus* Cumb.; BATHER (19) p. 202.
†*Astropodia*, its meaning; loc. cit.
†*Astylocrinus*, vide *Agassizocrinus*.
†*Ataxocrinus*, vide *Anomalocrinus*.
Atelecrinidae, diagnosis; BATHER (19) p. 195.
Atelecrinus; loc. cit. & fig. cxviii.
†*Atelestocrinus*; op. cit. p. 179, fig. xvii.
†*Atocrinus*, probably *Platycr.*; op. cit. p. 202.
†*Aulocrinus*; op. cit. p. 180. *A. agassizi*, pores in anal sac; SPRINGER (314) p. 140, pl. xvi.
†*Austinocrinus*; BATHER (19) p. 183.
†*Bactrocrinus*, discussed; op. cit. p. 173.
†*Baeocrinus*, vide *Hoplocrinus*.
†*Balanocrinus* Troost, syn. of *Lampteroocr.*; BATHER (19) p. 202.
†*Balanocrinus* Lor.; op. cit. p. 182, fig. ci. *B. antiquus* (p. 20); *B. bathonicus*, large columnals approaching *B. pentagonalis* (p. 21); *B. campichei*, distinction from *B. subteres* (p. 23); *B. changarnieri* (p. 23); *B. inornatus* (p. 21); *B. marioni* (p. 23); *B. moeschi* (p. 21); LISSAJOUS (195). *B. pentagonalis*; op. cit. p. 22: HUENE (166) p. 355: KOBY (177) p. 200: LORIOL (206) p. 182: ROLLIER & TRIBOLET (284). *B. cf. pentagonalis*, columnals from Callovian (p. 21, pl. iii); *B. pernaldensis* (p. 23); *B. stockhornensis*, probably var. of *B. subteres* (p. 22): LISSAJOUS (195). *B. subteres*; HUENE (166) pp. 351, 352, 354, 357, 359: KOBY (177) p. 214: roots figd., perhaps only fixed in young, also meristic variation, see II, B, ii, d, 1; LISSAJOUS (195) p. 22, pl. iii. *B. subteroides*; op. cit. p. 20.
†*Barrandocrinidae*, diagnosis; BATHER (19) p. 166.
†*Barrandocrinus*, incl. ? *Cylcoocr.* Miller, discussed; loc. cit. and fig. lxxx.
†*Barycrinus*; BATHER (19) p. 179.
Bathyocrinidae, diagnosis; op. cit. p. 185.
Bathycrinus, incl. *Ilycr.*, morphology and systematic position discussed; op. cit. p. 186, figg. xviii, xxiii, liii, cv, cvi. *B. sp.* nondescr., Antarctic; CHUN (63) pp. 226, 486.
†*Batocrinidae*, diagnosis, genera discussed; BATHER (19) p. 167.
†*Batocrinidea*, Sub-order, diagnosis, divided into families *Tanao-*, *Xeno-*, *Carpo-*, *Barrandoe-*, *Coelo-*, *Bato-*, *Periecho-crinidae*; op. cit. p. 164.
†*Batocrinus*; op. cit. p. 167, fig. lxxxii. *B. prodigialis* agrees with type specimens of *Actinocr. yandelli* Shumard; KLEM (173) p. 174. *B. rotadentatus*, specimen figured by Wachsmuth & Springer, N. Amer. Camerata, pl. xlvi, fig. 7, is *B. calvini*, but figg. 6a, 6b, named *Lobocrinus aequibrachiatus*, are this sp.; ROWLEY (290) p. 271. *B. (?) springeri*, n. sp., top of Lower Burlington Limestone, Louisiana, Mo.; op. cit. (289) p. 72, pl. ii.
†*Belennoocrinidae*, diagnosis; BATHER (19) p. 152.
†*Belennoocrinus*, discussed, *B. florifer*, *B. typus*, stems; loc. cit.
†*Beyrichocrinus*; op. cit. p. 168. *B. humilis*, structure discussed, Waagen & Jahn's account criticised, probably Monocyclic, and perhaps a Periechocrinid; BATHER (21) pp. 103, 105, fig. 1.
†*Blairocrinus*, vide *Actinoocrinus*.
†*Bohemicocrinus*, discussed; BATH

- crinus* ?), *pulverens* (corrected to *pulvereus*) structure discussed, apparently a *Carpoor.* or *Desmidocr.*; BATHER (21) p. 106, fig. 2 : vide etiam *Vletavir.*
- †*Botryocrinidae*, diagnosis ; BATHER (19) p. 179.
- †*Botryocrinus*, incl. *Sicyocrinus* ; loc. cit. and figg. iii, xiii, xxi, xcvi : name must yield to *Sicyocrinus* because the latter appears on the previous page "und somit auf Priorität Anspruch hat"; JAEKEL (167) p. 373. *B. polyxo*, redescr.; WELLER (348) p. 66, pl. xiv.
- Bourgueticrinidae*, diagnosis, genera descr.; BATHER (19) p. 193.
- †*Bourgueticrinus*, descr.; op. cit. p. 194. *B. sp.*; SCHMIDT (301) p. cxviii. *B. sp.*, in Eocene; REIS (278) p. 84. *B. aequalis*, original drawings; BATHER (19) p. 193, fig. cxv : as zonal fossil; ROWE (288) p. 344. *B. didymus*, columnals, distinguished from *B. cornutus*; OPPENHEIM (251) p. 77, pl. xviii. *B. ellipticus*; DEECKE (82) pp. 42, 55, 71; DIBLEY (92) p. 493 : and other forms, figured but not named, as zonal fossils; ROWE (288) pp. 297, 304, 344, pl. viii. *B. goniaster* [sic] in Eocene; REIS (278) p. 84.
- †*Brachiocrinus*, vide *Herpetocrinus*.
- †*Brahmacrinus*, n. g., "an auncient form, uniting the *Melocrinidae* and *Platycrinidae*," with genotype *B. ponderosus*, n. sp., Carboniferous Limest., Lancashire and Yorkshire [?], types in Oxford Mus. and Brit. Mus.; SOLLAS (312), p. 264, pl. xvi, and text-figg. 1, 2 : in opinion of Wachsmuth & Springer and of the speaker is only a *Platycrinus*; BATHER in discussion.
- †*Briarocrinus*; BATHER (19) p. 162.
- †*Bursacrinus*, incl. *Synyphocrinus*, discussed ; op. cit. p. 180.
- †*Cacubocrinus*, vide *Dolatocrinus*.
- †*Cactocrinus*, discussed ; BATHER (19) p. 170, fig. xliv. *C. obesus* is from middle of Upper Burlington at White Ledge, Mo.; ROWLEY (291) p. 251.
- Cainocrinus*, vide *Isocrinus*.
- Calamocrinus*, descr.; BATHER (19) p. 192, figg. xxiv, cxiii, cxiv.
- †*Calathocrinus* Hall, vide *Teleocrinus*.
- †*Calathocrinus* Meyer, vide *Encrinus*.
- †*Calceocrinidae*, diagnosis, with diagrams of genera ; BATHER (19) p. 147.
- †*Calceocrinus*, incl. *Cheirocr.* Salter, *Pendulocr.*, ? *Deltocr.*; op. cit. p. 148, figg. lx, lxi. *C. barrii*; NORTON (248) p. 451.
- †*Caleidocrinus*, discussed ; BATHER (19) p. 202 : discussed, an early representative of *Flexibilia impinidata*, approaching the ancestor of *Ichthyocr.* and *Taxocr.* (p. 111); *C. barrandei*, probably syn. of *C. multiramus* (p. 112); *C. multiramus* (p. 111, fig. 5): BATHER (21).
- †*Callawaycrinus*, vide *Dactylocrinus* Quenst.
- †*Callicrinus*, incl. *Cryptodiscus*; BATHER (19) p. 164, fig. lxxvii. *C. bifurcatus*, n. sp., Niagara, Joliet, Ill., perhaps belongs to *C. longispinus* (p. 125, pl. viii); *C. bilobus* Weller (as *Cryptodiscus*), redescr. (p. 125, pl. x); *C. cornutus*, redescr. (p. 118, pl. viii); *C. corrugatus* Weller (as *Cryptodiscus*), includes the "?????" S. A. Miller, 1892, redescr. (p. 123, pl. xi); *C. desideratus*, n. sp., Niagara, Racine, Wis. (p. 122, pls. ix, x, xi); *C. digitatus* Weller (as *Cryptodiscus*), redescr. (p. 124, pls. ix, xi); *C. hydei* Weller (as *Cryptodiscus*), redescr. (p. 124, pls. viii, ix, x); *C. longispinus*, n. sp., Niagara, Joliet, Ill., allied to *C. murchisonianus* (p. 119, pl. viii); *C. pentangularis*, n. sp., Niagara, Bridgeport, Ill. (p. 120, pl. viii): WELLER (348).
- †*Calocrinus*, perhaps a *Cupressocr.*; BATHER (19) p. 202.
- †*Calpiocrinus*, diagnosis ; op. cit. p. 189, fig. cx. *C. ? boemicus* Waagen & Jahn is the root of a crinoid comparable with *Lichenocr.*; BATHER (21) p. 112, fig. 6.
- †*Calycanthocrinus*, origin of pararadials discussed ; BATHER (19) p. 150, fig. lxii.

- +*Camarocrinus*, vide *Scyphocrinus* Zenker. *C. safordi*; SCHUCHERT (303) p. 280.
- +*Camerata* W. & Sp. (pp. 139, 140); Order of *Monocyclida*, diagnosis and discussion (p. 159); Order of *Dicyclida*, diagnosis, divided into families, *Reteo-*, *Dimero-*, *Lamptero-*, *Rhodo-crinidae* (p. 198): BATHER (19).
- +*Campanulites*; op. cit. p. 202.
- +*Campptocrinus*; op. cit. p. 159.
- +*Canistrocrinus*, vide *Glyptocrinus*.
- +*Carabocrinidae*, diagnosis; BATHER (19) p. 172.
- +*Carabocrinus*, orals and ambulacrals; loc. cit. and figg. v, lxxiv. *C. sp.*; WINCHELL & ULRICH (357) p. cxxiii.
- +*Carduocrinus*, vide *Lophocrinus*.
- +*Carolicrinus barrandei*, apparently a large sp. of *Abacocrinus* (q.v.); BATHER (21) p. 107.
- +*Caropocrinidae*, diagnosis, genera described; BATHER (19) p. 166.
- +*Caropocrinus*, incl. *Phoenicocr.*, *Abracr.*, *Habrocr.*, *Pionocr.*, and ? *Leptocr.*, discussed; loc. cit. and fig. lxxix.
- +*Caryophyllites*, vide *Eugeniacrinus*.
- +*Cassianocrinus*, vide *Encrius*.
- +*Castanocrinus*, vide *Melocrinus*.
- +*Castocrinus*; BATHER (19) p. 148, fig. lxi.
- +*Catillocrinidae*, diagnosis, relation to *Pisocrinidae*, description of genera; op. cit. p. 150.
- +*Catillocrinus*, incl. *Nematocr.*, discussed; loc. cit. and fig. lxii.
- Cenocrinus*, vide *Isocrinus*.
- +*Centriocrinus*; BATHER (19) p. 162.
- +*Centrocrinus* Austin, vide *Platycrinus*.
- +*Centrocrinus* Worthen, ? syn. of *Gazacr.*; BATHER (19) p. 202.
- +*Ceramocrinus*, vide *Gasterocoma*.
- +*Cericrinus* Desor, vide *Millericrinus*.
- +*Cericrinus* White, vide *Delocrinus*.
- +*Cheirocrinus* Hall non Eichw., vide *Euchirocrinus*.
- +*Chelocrinus*, vide *Encrius*.
- +*Chicagocrinus*, n. g. of *Eucalyptocrinidae* (p. 126), with genotype *C. ornatus*, n. sp., Bridgeport, Ill. (p. 127, pl. vii), also *C. inornatus*, Joliet, Ill. (p. 128, pl. vii), both Niagara Limestone; WELLER (348).
- +*Chladocrinus*, vide *Pentacrinus*.
- +*Cicerocrinus*, n. g. of *Pisocrinidae* [i.e. *Triacrinidae* Jaek.], with genotype *C. elegans*, n. sp., Wenlock Limest., Dudley ?; SOLLAS (312) p. 267, pl. xvi, text-fig. 3: arm-branching shows it to be "the climax of the *Heterocrinidae*"; BATHER in discussion: "a link uniting the two families"; SOLLAS in added footnote, p. 270: vide etiam *Lagarocr.*
- +*Cladocrinus* Austin, vide *Taxocrinus*.
- +*Cladoidea* Jaekel; BATHER (19) p. 141.
- +*Cleioocrinus*, referred provisionally to *Flexibilia impinnata*; op. cit. p. 191.
- +*Clematorcrinus*, vide *Hapalocrinus*.
- +*Clidochirus*, descr.; BATHER (19) p. 188.
- +*Clonocrinidae*, diagnosis; op. cit. p. 162.
- +*Clonocrinus* Oehl, vide *Melocrinus*.
- +*Clonocrinus* Quenst., incl. *Corymboocr.* (q.v.); BATHER (19) p. 162, fig. lxvi.
- +*Closterocrinus*; op. cit. p. 173.
- Coadunata* Miller; op. cit. p. 138.
- +*Coccocrininae*, diagnosis, discussion of genera; op. cit. p. 156.
- +*Coccocrinus*, incl. *Amblacr.*, discussed; loc. cit.
- +*Codiocrinidae*, diagnosis; BATHER (19) p. 176.
- +*Codiocrinus*; op. cit. p. 177, fig. xcii.
- +*Conodonocrinus*; op. cit. p. 202.

- †*Coelocrinoides*; BATHER (19) p. 180. *C. ventricosus*, criticism of Wachsmuth and Springer's figure showing pores; BATHER (22) p. 311.
- †*Coelocrinidae*, diagnosis, genera discussed; BATHER (19) p. 187.
- †*Coelocrinus* M. & W., incl. *Sphaerocr.* M. & W., and *Aeroocr.*; loc. cit. and fig. lxxxi.
- †*Coelocrinus* Salter, vide *Rhaphanocrinus*.
- Comaster*, vide *Actinometra*.
- Comatula*, vide *Antedon*: para, vide *Actinometra*.
- Comatulina*, syn. of *Antedon*; BATHER (19) p. 202.
- Comaturrella*, syn. of *Antedon*; loc. cit.
- †*Compeocrinoides*; op. cit. p. 165, fig. lxxviii.
- †*Condylocrinoides*, discussed; op. cit. p. 201.
- †*Conocrinus* Troost; BATHER (19) p. 202.
- Conocrinus* d'Orb., syn. of *Rhizocr.* (q. v.); op. cit. p. 194. †*C. pyriformis* [sic] = *C. thoracis* d'Arch., distinguished from *C. sessilis* = *C. thoracis* Menegh.; OPENHEIM (251) p. 78. †*C. sequens*, dorsal caps descr. and measured; NOELLI (243) p. 12, pl. i.
- †*Cophinus*, its meaning; BATHER (19) p. 202.
- †*Cordylocrinoides*, discussed; op. cit. p. 156. *C. plumosus* and *C. (?)ramulosus*; SCHUCHERT (303) p. 279.
- †*Coronocrinus*, vide *Hadrocrinus*.
- †*Corymboocrinus*, vide *Clonocrinus* Queust. *C. chicagensis*, n. sp., Niagara, various loco. near Chicago, type from Bridgeport; WELLER (348) p. 100, pl. iv. *C. (?)macropetalus*; SCHUCHERT (303) p. 279. *C. niagarensis*, n. sp., Niagara, Chicago; WELLER (348) p. 101, pl. iv.
- †*Cosmoocrinus*; BATHER (19) p. 179.
- †*Costata* Jaekel; op. cit. p. 141.
Costata Müller; op. cit. p. 138.
- †*Cotyledorma*, incl. *Cotylecr.*; op. cit. p. 198.
- †*Cotyledonocrinus*, vide *Dichocrinus*.
- †*Crateriocrinus* (*Synbathocrinus*) *encrinoides* De Kon., Calciferous sandstone, Kirkcudbright; PEACH (259) p. 65. [Is this meant for *Graphiocr. encrinoides* Kon. & Le Hon?]
- †*Cremnaeocrinus*, vide *Euchirocrinus*. *C. sp.*; WINCHELL & ULRICH (357) p. cxxiii.
- Crinoidea*, sens. restr. Jaekel; BATHER (19) p. 141.
- †*Cromyocrinidae*, diagnosis, genera discussed; op. cit. p. 180.
- †*Cromyocrinoides*; BATHER (19) p. 181, fig. c.
- †*Crotalocrinidae*, diagnosis, systematic position discussed; op. cit. p. 176.
- †*Crotalocrinoides*, incl. *Anthocr.*; loc. cit. and figg. I, xcii. *C. americanus*, n. sp., Niagara, Bridgeport, Ill.; WELLER (348) p. 143, pl. xiv. *C. pulcher*, description and drawing of a tegmen; BATHER (19) p. 176, fig. xcii.
- †*Crumenaecrinoides*; op. cit. p. 202.
- †*Cryptodiscus* discussed and all spp. referred to *Callicrinus* (q. v.); WELLER (348) p. 121.
- †*Ctenocrinus*; BATHER (19) p. 161.
- †*Culicocrinus*, vide *Clyllicocrinus* Müller.
- †*Cypressocrinidae*, diagnosis, genera discussed; BATHER (19) p. 177.
- †*Cypressocrinoides*, incl. *Halocr.* and *Cyphocr.*, descr.; loc. cit. and fig. xciv. *C. impreseus* McCoy, incl. *Poteriocr. maccoyanus*; PEACH (260) p. 222. [this is usually referred to *Hydrenocr.*]
- †*Cupulocrinoides*, discussed; BATHER (19) p. 202.
- †*Cyathidium*, incl. *Micropocr.*; op. cit. p. 198.
- †*Cyathocrinidae*, diagnosis, genera described; op. cit. p. 173.
- †*Cyathocrinoides*, Sub-order, diagnosis, division into Families *Carabopalaeo-*, *Euspiro-*, *Sphaero-*, *Cyatho-*, *Petalo-*, *Crotalo-*, *Codia-*, *Cypresso-crinidae*, and *Gasterocomidae*; op. cit. p. 172 et seqq.

- +*Cyathocrinus*, redescr.; BATHER (19) p. 173, ff. xxvi, xxxix, xlivi, lxxxix. *C. capillaris* Phill. is *Gisocr.*; BATHER in Review of WELLER (348). *C. cora*, redescr.; WELLER (348) p. 62, pl. xiv: description of arms does not agree with drawings; BATHER in Review. *C. multibrachiatus*, original drawing; BATHER (19) p. 174, fig. lxxxix. *C. ornatisimus* Hall, probably *Mariae*; WHITFIELD & HOVEY (351) p. 197. *C. ramosus*, a figure of Angelin's copied; WELLER (348) fig. 14: the specimen is *C. longimanus*; BATHER in Review. *C. cf. ramosus* Schlothe., columnals, cirri, compared with *C. kattaensis* [of course not a *Cyathocrinus*]; FRECH (124) p. 285. *C. turbinatus*, n. sp., Niagaraon, Chicago; WELLER (348) p. 65, pl. xiv. *C. vanhornei*, redescr., abnormal anal; op. cit. p. 64, pl. xiv. *C. cf. virgalensis*, columnals; FRECH (124) p. 285.
- +*Cyclocrinus* [i.e. *Acrochordocr.* q.v.] sp. ?; LISSAJOUS (195) p. 17. *C. sp.*; STRUEBIN (324) pp. 335, 337. *C. sp.*; KILIAN & LORY (170) p. 52. *C. areolatus*; LISSAJOUS (195) p. 17. *C. macrocephalus*; KOBY (177) p. 196: columnals, some curiously tapering, one bored by *Saxicava*; LISSAJOUS (195) p. 16, pl. iii. *C. rugosus*; op. cit. p. 16.
- +*Cyllocrinus* Müller non Müller, vide *Barrandeocrinus*.
- +*Cyllocrinus* Müller (seu *Culicocrinus*), discussed; BATHER (19) p. 166.
- +*Cyphocrinus*, vide *Cupressocrinus*.
- +*Cyphocrinus*, incl. *Hyptioocr.*; BATHER (19) p. 199; WELLER (348) p. 76. *C. chicagoensis*, n. sp., Niagaraon, Bridgeport, Ill.; loc. cit. pl. i.
- +*Cypressocrinus* = *Cupressocrinus*; BATHER (19) p. 202.
- +*Cyrtidocrinus*; op. cit. p. 188.
- +*Cyrtocrinus*, vide *Torynocrinus*.
- +*Cystocrinus*; BATHER (19) p. 202, fig. i.
- +*Cytoocrinus*, vide *Melocrinus*.
- +*Dactylocrinidae*, diagnosis; BATHER (19) p. 189.
- +*Dactylocrinus* Slad., vide *Scytalecrinus*.
- +*Dactylocrinus* Quenst., incl. ? *Aristocr.* seu *Callawayocr.*, diagnosis; BATHER (19) p. 189, fig. cx.
- +*Dadocrinus*; op. cit. p. 182.
- +*Daemonocrinus*; op. cit. p. 202.
- Decacnemos*, syn. of *Antedon*; loc. cit.
- +*Decadactylocrinus*; loc. cit.
- +*Decadocrinus*; BATHER (19) p. 180. *D. grandis*, pores in anal sac; SPRINGER (314) p. 144, pl. xvi. *D. tumidulus* M. & G., incl. *D. grandis* W. & Sp. pars, pores in anal tube; op. cit. p. 139, pl. xvi.
- Decameros*, syn. of *Antedon*; BATHER (19) p. 202.
- +*Delocrinus*, incl. *Cerioocr.* White; op. cit. p. 180, fig. c. *C. craigi*, redescr., measurements; BEDEE (29) p. 32, pl. vi. *C. hemisphericus*, type at Washburn Coll.; op. cit. p. 34, pl. vi. *C. missouriensis*, incl. *C. hemisphericus* Mill. & Gurl. non Shum., redescr., measurements; op. cit. p. 35, pl. vi. *C. monticulatus*, redescr., measurements; op. cit. p. 33, pl. vii.
- +*Deltocrinus*, vide *Calceocrinus*.
- +*Dendrocrinidae*, diagnosis; BATHER (19) p. 178.
- Dendrocrinoidea*, Sub-order, diagnosis, divided into Families *Dendro-*, *Botryo-*, *Lopho-*, *Scaphio-*, *Scytale-*, *Graphio-*, *Cromo-*, and *En-* *ocrinidae*, which constitute Grade *Distincta*, and *Pentacriniidae*, *Uinta-* *crinidae*, *Marsupitidae*, and *Bathyocrinidae*, which constitute Grade *Articulata*; BATHER (19) p. 178 et seqq.
- +*Dendrocrinus*; op. cit. p. 179, figg. xxvi, xcvi. *D. sp.*; WINCHELL & ULRICH (357) p. cxxiii. *D. cambriensis*, allied to *Iocr.*; BATHER (19) p. 146.
- +*Desmidocrinus*; op. cit. p. 186.
- +*Diabolocrinus*; op. cit. p. 200.

- [†]*Diamenocrinus*; BATHER (19) p. 200.
[†]*Dichocrinus*, incl. *Cotyledonocrinus*; op. cit. p. 159.
Dicyclica, Sub-class, diagnosis, and classification under Orders *Inadunata*, *Flexibilia*, and *Camerata*; op. cit. p. 171 et seqq.
[†]*Dimerocrinidae*, diagnosis; BATHER (19) p. 198.
[†]*Dimerocrinus*, incl. *Glyptaster*, *Thysanocr.*, and *Eucr.*; loc. cit. fig. cxxiii.
D. decadactylus, original drawing; op. cit. p. 199, fig. cxxiii.
[†]*Dimorphocrinus*, syn. of *Orophocrinus*, vide iv, H; op. cit. p. 202.
[†]*Distincta*, Grade of *Dendrocrinoidea*; op. cit. p. 178.
[†]*Dizygocrinus*; BATHER (19) p. 168.
[†]*Dolatocrinidae*, diagnosis; op. cit. p. 164.
[†]*Dolatocrinus*, incl. *Cacabocr.*; loc. cit. fig. xlvi.
[†]*Dolichocrinus*, incl. *Tetanocr.*, discussed; op. cit. p. 197.
[†]*Doliolocrinus*; BATHER (19) p. 202.
[†]*Donacicrinus*; loc. cit.
[†]*Dorycrinus*, discussed; op. cit. p. 167. *D. gouldi*, specimen figured by Keyes, Missouri Geol. Surv. iv, pl. xxiii, fig. 1, is *D. mississippiensis*; ROWLEY (290) p. 271. *D. missouriensis*, v. sub *Eretmocrinus nodosus*.
D. pentalobus, n. sp., base of Upper Burlington Limest., Louisiana, Mo., and White Ledge, Mo.; ROWLEY (289) p. 72, pl. ii.
[†]*Echinocrinus* = *Archaeocidaris*, vide iv, c; BATHER (19) p. 202.
[†]*Ectenocrinus*, discussed; op. cit. p. 146, fig. lviii.
[†]*Edriocrinus*, referred provisionally to *Flexibilia impinnata*; op. cit. p. 191, fig. cxii. *E. becraftensis*, n. sp., Oriskany beds of BeCraft Mt., N.Y., calyces; CLARKE (67) p. 62, pl. ix. *E. pocilliformis*; SCHUCHERT (303) p. 279. *E. sacculus*; op. cit. pp. 292, 313: WELLER (349) p. 43.
[†]*Edwardsocrinus*, vide *Platycrinus*.
[†]*Emperocrinus*, discussed; BATHER (19) p. 202: possible syn. of *Archaeocr.*; WELLER (348) p. 89.
[†]*Enallocrinus*; BATHER (19) p. 176, fig. xcii.
[†]*Encrinidae*, diagnosis; op. cit. p. 181.
[†]*Encrinos*; op. cit. p. 202.
[†]*Encrinus*, incl. *Chelocr.*, ? *Culathocr.*, *Flabellocr.*, ? *Cassianocr.*, ? *Travmatocr.*, *Porocr.* Dittm.; op. cit. p. 182. *E. cassianus*; BROILI (48) p. 369: O. GORDON (132) p. 340, and (249) p. 309: KOSSMAT (184) p. 95: ZITTEL (368) p. 349. *E. granulosus*; BROILI (48) p. 369: O. GORDON (132) p. 340 and (249) p. 309: MARIANI (223) p. 1254: ZITTEL (368) p. 349. *E. liliiformis*, reconstruction of Muschelkalk sea-floor, showing 3 individuals of this as in life (fig. 2 on p. 17), with popular description of the species (p. 20); FRAAS (123). *E. liliiformis*?; DOUILLE (94) p. 595. *E. cf. liliiformis*, fine for size and preservation; GEYER (126) p. 120. *E. cf. liliiformis*, Beyrich from Timor, 1864, perhaps same genus as *Cyathocr. virgalensis* [which is probably not a Cyathocrinoid at all]; FRECH (124) p. 285. *E. silesiacus* Quenst., discussed; KOKEN (182) p. 213. *E. varians*; BROILI (48) p. 369: O. GORDON (132) p. 340, and (249) p. 309: ZITTEL (368) p. 349.
[†]*Entrochus*; BATHER (19) p. 202. *E. rotiformis*, n. sp., Trias of Kweitschou, China, columnals only; KOKEN (182) p. 212, pl. x.
[†]*Epuctocrinus*, vide *Gasterocroma*.
[†]*Eretmocrinus*; BATHER (19) p. 167. *E. expansus* Keyes, is a *Cactocrinus*; ROWLEY (291) p. 251. *E. nodosus*, n. sp., base of Upper Burlington Limest., Louisiana, Mo., incl. specimen figd. as *Dorycrinus missouriensis* by Wachsmuth & Springer, Revision Palaeocrin. iii, pl. iv, fig. 5: ROWLEY (289) p. 73, pl. ii.
[†]*Erisocrinus*; BATHER (19) p. 181, fig. c. *E. megalobrachius*, redescr., measurements; BEEDE (29) p. 37, pl. vii. *E. typus*, variations from type in a specimen at Washburn College; op. cit. p. 39, pl. vi.

- [†]*Eucalyptocrinidae*, diagnosis, genera described; BATHER (19) p. 163.
- [†]*Eucalyptocrinus*, incl. *Hypanthocrinus*, endothecal laminae not hydro-spires; op. cit. p. 164. *E. asper*, n. sp., Niagaran, Bridgeport and Hawthorn, Ill., allied to *E. elrodi* and distinguished from *E. caelatus*; WELLER (348) p. 110, pl. v. *E. caelatus*; WILLIAMS (352) p. 36. *E. cornutus*; NORTON (248) p. 438. *E. crassus*, redescr., incl. *E. chicagoensis* Winch. & Mar., and *E. constrictus* Hall; WELLER (348) p. 105, pl. v. *E. depressus*, redescr.; op. cit. p. 114, pl. vii. *E. egani*, redescr.; op. cit. p. 108, pl. vii. *E. inornatus*, n. sp., Niagaran, Bridgeport and Hawthorn, Ill.; op. cit. p. 115, pl. vi. *E. magnus?* or perhaps a large *E. asper*, descr.; op. cit. p. 116, pl. vi. *E. nodulosus*, n. sp., Niagaran, Bridgeport, Ill., perhaps incl. some specimens referred by Hall to *E. crassus*; op. cit. p. 109, pl. vii. *E. obconicus*, redescr.; loc. cit. pl. vii. *E. ornatus*, redescr.; op. cit. p. 111, pl. vi. *E. rotundus*, redescr., probably young of another sp.; op. cit. p. 113, pl. v. *E. turbinatus*, redescr.; op. cit. p. 107, pl. vi.
- [†]*Euchirocrinus*; incl. *Cheiocr.* Hall, *Cremacr.* (q.v.), and *Proclivocr.*; BATHER (19) p. 148, fig. lxi.
- [†]*Eucladocrinus*, evolution of; op. cit. p. 158, fig. lxxi.
- [†]*Eucrinidea* Zittel; op. cit. p. 139.
- [†]*Eucrinus*, vide *Dimerocrinus*.
- [†]*Eudesicrinidae*, diagnosis, doubtfully referred to *Flexibilia pinnata*; BATHER (19) p. 198.
- [†]*Eudesicrinus*; loc. cit.
- Eudioecrinus*, incl. *Ophiocr.* Semper; op. cit. p. 195. *E. sp.* nondescr., 1289 metres, Somali coast; CHUN (63) p. 488. *E. indivisus*; PFEFFER (267).
- [†]*Eugeniacrinidae*, diagnosis, genera descr.; BATHER (19) p. 197.
- [†]*Eugeniacrinus*, incl. *Symphtocrinus*, *Caryophyllites*, descr.; loc. cit. and fig. cxx. *E. sp.* (pp. 15, 33), *E. (Hemicr.) astieri* (pp. 47, 52); KILIAN & LORY (170). *E. caryophyllatus*; LISSAJOUS (195) p. 2. *E. (Hemicr.) gevreyi*; KILIAN & LORY (170) p. 52. *E. hagenowi*; DEECKE (82) pp. 55, 71. *E. heberti*; KILIAN & LORY (170) p. 33. *E. hoferi*; LISSAJOUS (195) p. 2. *E. moussonii*; HUENE (166) p. 356; LISSAJOUS (195) p. 2.
- [†]*Eupachycrinus*; BATHER (19) p. 181, fig. c. *E. magister*; BEDEDE (29) p. 40, pl. vi. *E. tuberculatus?*=n. sp.? GIRTY (130) pp. 542, 575.
- [†]*Euryalecrinus*, vide *Taxocrinus*.
- [†]*Euryocrinus*; BATHER (19) p. 190.
- [†]*Euspirocrinidae*, diagnosis; op. cit. p. 173.
- [†]*Euspirocrinus*; loc. cit. and figg. xxxviii, lxxxvii.
- [†]*Eutrochocrinus*; BATHER (19) p. 167.
- [†]*Extracrinus*, vide *Pentacrinus*.
- [†]*Fistulata* of W. & Sp. (p. 139), of Jaekel (p. 141); BATHER (19).
- [†]*Flabbelocrinus*, vide *Eocrinus*.
- Flexibilia* Zittel; BATHER (19) p. 140: Order of *Dicyclica*, diagnosis, divided into two Grades, *Impinnata* and *Pinnata*; op. cit. p. 187.
- [†]*Forbesiocrinus* Ang., vide *Lithocrinus*.
- [†]*Forbesiocrinus* de Kon. non W. & Sp., vide *Taxocrinus*. *F. agassizi*, either *Sagenocr.* or new genus of *Sagenocrinidae*; BATHER (19) p. 190.
- [†]*Gammarocrinus*, incl. *Sclerocrinus*; op. cit. p. 197.
- Ganymeda*, syn. of *Antedon*; op. cit. p. 203.
- [†]*Gasterocrinus*, incl. *Epactocr.* and *Ceramocr.*; op. cit. p. 177.
- [†]*Gasterocomidae*, diagnosis; loc. cit.
- [†]*Gastropocrinus*; BATHER (19) p. 179, fig. xvii.
- [†]*Gaurocrinus*; op. cit. p. 203.
- [†]*Gazacrinidae*, diagnosis as Fam. of *Flexibilia Impinnata*; op. cit. p. 188.
- [†]*Gazacrinus*, name preferred to *Idiocrinus*; WELLER (348) p. 78: incl.

- Idiocr.*, placed doubtfully among *Flexibilis Impinnata*; BATHER (19) p. 188, fig. cix [this fig. quite possibly misinterprets the original drawings, which are obscure]. *G. major*, n. sp., Niagaran, Hawthorn, Ill.; WELLER (348) p. 78, pl. iii. *G. minor*, n. sp., Niagaran, Bridgeport, Ill.; op. cit. p. 80, pl. iii.
- †*Gennaeocrinus*, descr.; BATHER (19) p. 169.
- †*Geocoma* Fraas, vide *Antedon*.
- †*Geocrinus*, vide *Periechocrinus*.
- †*Gilbertocrinus*, incl. *Ollacr.*, *Goniasteroidocr.*, and *Trematocr.*; BATHER (19) p. 201, fig. cxxvii.
- †*Gissocrinus*, descr.; op. cit. p. 175, figg. viii, ix, xli, xc.
- †*Glenotremites*, syn. of *Antedon*; op. cit. p. 203.
- †*Glyptaster*, vide *Dimerocrinus*.
- †*Glyptocrinidae*, diagnosis; BATHER (19) p. 160.
- †*Glyptocrinus*, incl. *Canistrocr.* and *Pycnocr.*; op. cit. p. 161, fig. xxv. *G. sp.*; WINCHELL & ULRICH (357) p. cxxiii. *G. basalis*; MALAISE (218) p. 806, and (219) p. 205. *G. plumosus*; FOERSTE (112) p. 72 (see III, B, iv, g).
- †*Gnathocrinus fusiformis*, syn. of *Millericrinus pratti*; BATHER (19) p. 203.
- †*Gnorimocrinus*, redescr.; op. cit. p. 189.
- Goldfussia* Norman; op. cit. p. 203.
- †*Goniasteroidocrinus*, vide *Gilbertocrinus*.
- †*Goniocrinus*; BATHER (19) p. 179.
- †*Gothocrinus*; loc. cit.: armlets perhaps branch; JAEKEL (167) p. 373.
- †*Grammocrinus*; BATHER (19) p. 203.
- †*Graphiocrinidae*, diagnosis; op. cit. p. 180.
- †*Graphiocrinus*; loc. cit. and fig. c: vide etiam *Craterocrinus*.
- †*Guettardicrinus*; BATHER (19) p. 192.
- †*Gymnocrinus*; op. cit. p. 197.
- †*Habrocrinus*, vide *Carpocrinus*.
- †*Hadrocrinus*, incl.? *Coronocrinus*, fusion of primibrachs; BATHER (19) p. 164. *H. polydactylus*; SCHUCHERT (303) p. 280.
- †*Halocrinus*, vide *Cupressocrinus*.
- †*Halophenix*, syn. of *Pentacrinus*; BATHER (19) p. 203.
- †*Hapalocrinus*, incl. *Agriocr.*, *Thallocr.*, *Clematocr.*, redescr.; op. cit. p. 156, fig. lxi.
- †*Haplocrinidae*, diagnosis; op. cit. p. 151.
- †*Haplocrinus* (seu *Aplocr.*), analysis, anal pore; op. cit. pp. 126, 151, fig. lxiv.
- †*Harmocrinus*, vide *Stelidiocrinus*.
- †*Helmintolithus entrochus*; BATHER (19) p. 203. *H. portentosus*, syn. of *Pentacrinus*; loc. cit.
- †*Hemicrinus*, vide *Torynocrinus*: spp. etiam sub *Eugeniacr.*
- †*Herpetocrinus*, incl. *Ophiocr.* Charlesw., *Myelodactylus* Ang. & ?Hall, and *Brachioocr.* Hall, redescr.; BATHER (19) p. 146, fig. lix: stem sharply pentagonal; ZITTEL & EASTMAN (369) p. 153: certainly not; BATHER in Review. *H. nodosarius*; SCHUCHERT (303) p. 279. Vide etiam *Myelodactylus*.
- Hertha*, syn. of *Antedon*; BATHER (19) p. 203.
- †*Heterocrinidae*, diagnosis, and description of genera; op. cit. p. 145.
- †*Heterocrinus*, incl. *Stenoocr.*, discussed; op. cit. p. 146, fig. lviii.
- †*Hexacrinidae*, diagnosis; op. cit. p. 158.
- †*Hexocrinus*; loc. cit. and fig. lxxii.
- Hibernula*, vide *Antedon*.
- †*Holocrinus*; BATHER (19) p. 182.
- Holopodidae*, diagnosis; op. cit. p. 197.
- Holopus*; loc. cit. and figg. xxxiv, cxxi.
- †*Homalocrinus*, diagnosis; op. cit. p. 189.

- [†]*Homocrinus*; BATHER (19) p. 179, fig. xcvi. *H. proboscidalis* [sic]; SCHUCHERT (303) pp. 292, 313. *H. scoparius*; op. cit. p. 279.
- [†]*Hoplocrinus*, incl. *Baerocr.*; BATHER (19) p. 145, fig. lvii.
- [†]*Hyboocrinidae*, diagnosis; BATHER (19) p. 145.
- [†]*Hybocrinus*, incl. *Indianocr.*; loc. cit. and figg. vi, xxxvi, lvii.
- [†]*Hybocystis*, redescr., relations to *Crinoidea*, referred to *Hyboocrinidae*; op. cit. pp. 95, 145, fig. i.
- [†]*Hydreonocrinus*; op. cit. p. 180. *H.* sp.; PEACH (260) p. 223. *H. globularis*; loc. cit. *H. impressus*, vide sub *Cupressocrinus*. *H. kansasensis* (p. 42), *H. subcinnatus* (p. 43); BREDE (29) pl. vii.
- [†]*Hydrocrinus*, vide *Scaphocrinus*.
- Hyocrinidae*, description based on *Hyocrinus bethellianus*, which is discussed; BATHER (19) p. 153, fig. lxvii.
- Hyocrinus* sp. nondescr., 4636 metres, Antarctic, about 60° E., 65° S., text-fig.; CHUN (63) pp. 226, 486.
- [†]*Hypanthocrinus*, vide *Eucalyptocrinus*.
- [†]*Hyperocrinus* (seu *Uperocrinus*), incl. *Lobocr.*; BATHER (19) p. 168.
- [†]*Hypocrinus*; op. cit. p. 178.
- Hypome*, vide *Antedon*.
- [†]*Hypiocrinus*, vide *Cyphocrinus*.
- [†]*Hystricrinus*, vide *Arthracantha*.
- [†]*Ichthyocrinidae*, diagnosis, genera discussed; BATHER (19) p. 187.
- [†]*Ichthyocrinus*; op. cit. p. 188, fig. cviii. *I. bohemicus*; BATHER (21) p. 114. *I. laevis*; WILLIAMS (352) p. 36. *I. subangularis*, redescr., incl. *I. corbis* Winch. & Mar., and S. A. Miller; WELLER (348) p. 146, pl. xv.
- [†]*Icosidactylocrinus*; BATHER (19) p. 203.
- [†]*Idiocrinus*, vide *Guzacrinus*.
- Ilycrinus*, vide *Bathyocrinus*.
- [†]*Impinnata* P. H. Carp. (p. 140); as Grade of *Flexibilitia*, diagnosis, division into Families *Ichthyo-*, *Gaza-*, *Taxo-*, *Dactylo-*, and *Sagenocrinidae* (p. 187 et seqq.); BATHER (19).
- Inadunata* W. & Sp. (p. 139), as Order of *Monocyclica*, diagnosis and discussion (p. 144), as Order of *Dicyclica*, diagnosis, relations of Families, divided into Sub-orders *Cyathocrinoida* and *Dendrocrinoida* (p. 171 et seqq.); BATHER (19).
- Inarticulata* Miller; BATHER (19) p. 138.
- [†]*Indianocrinus*, vide *Hybocrinus*.
- [†]*Iocrinus*, redescr.; BATHER (19) p. 145, figg. xxvi, xxviii, lviii.
- [†]*Irregularia* Carpenter & Etheridge; op. cit. p. 139.
- Isis*, vide *Isocrinus* Meyer.
- [†]*Isocrinus* Phill., vide *Taxocrinus*.
- Isocrinus* Meyer, incl. *Isis* pars, *Cainocr.*, *Pictetocr.*, *Cenocr.*, *Neocr.*, and *Pentacr.* para, descr.; BATHER (19) p. 182, figg. xi, xvi, xvii, xxiii, ci, cii: for spp. vide sub *Pentacr.*
- Kallisporgia*, larva of *Antedon*; op. cit. p. 203.
- [†]*Koninkocrinus*, syn. of *Torynocr.* and *Acrochordocr.*; loc. cit.
- [†]*Lagarocrinus* [syn. of *Cicerocr.* q.v.], n. g. of *Triucrinidae* with genotype *L. osiliensis*, n. sp., Upper Oesel beds, Oesel, co-types at St Petersburg Academy (p. 486 and text-fig. 1, 2), *L. anglicus*, n. sp., Lower Ludlow beds, Presteign, Radnorshire, S. Wales, holotype in Mus. f. Naturkunde, Berlin (p. 486, no fig.), *L. scanicus*, n. sp., Beyrichia Limestone, Scania, Sweden, holotype in Riksmuseum, Stockholm (p. 486, figg. 3, 4, 6, 7), *L. tenuis*, n. sp., Upper Ludlow beds, Ludlow, holotype in Brit. Mus. (p. 487, no fig.); JAEKEL (168).
- [†]*Lahuseniocrinus*, discussed; BATHER (19) p. 200.
- [†]*Lampterocrinidae*, diagnosis, genera discussed; op. cit. p. 199.
- [†]*Lampterocrinus*, descr.; op. cit. p. 199, fig. cxiv. *L. ? dubius*, n. sp., Niagaran, Lemont and Joliet, Ill., perhaps n. g. because arms un-

- branched; WELLER (348) p. 84, pl. ii: but arms not preserved BATHER in Review. *L. inflatus*, redescr., large specimen figd. (p. 81 pl. ii); *L. robustus*, n. sp., Niagara, Romeo, Lemont, and Joliet, Ill. (p. 82, pl. ii); *L. ? subglobosus*, n. sp., Niagara, Bridgeport and Haw thorn, Ill. (p. 83, pl. iii); WELLER (348).
- †*Larvata* Jaekel; BATHER (19) p. 141.
- †*Larviformia* W. & Sp.; op. cit. pp. 139, 140.
- †*Larbeocrinus*, systematic position; op. cit. p. 170. *L. barrandei*, structure discussed, referred to *Monocyclica Camerata*, compared with the abnormality of *Phillipocr.*; BATHER (21) p. 108, fig. 3.
- †*Lecanocrinus*; BATHER (19) p. 188. *L.* sp.; WELLER (349) p. 33. *L. waukoma* Hall (as *Cyathocr.*) redescr., incl. *L. pusillus* Winch. & Marion Hall; WELLER (348) p. 148, pl. xv.
- †*Lecythocrinus*; BATHER (19) p. 177.
- †*Lecythocrinus*; op. cit. p. 175.
- †*Leptocrinus*, vide *Carpocrinus*.
- †*Lithocrinus*, incl. *Forbesiocr.* Ang., diagnosis; BATHER (19) p. 189, fig. cx.
- †*Lobocrinus*, vide *Hyperocrinus*. *L. aequivibrachiatus*, v. sub *Batoocr. rotadentatus*; ROWLEY (290).
- †*Lobolithus*, vide *Scyphocrinus* Zenker.
- †*Lophocrinidae*, diagnosis; BATHER (19) p. 179.
- †*Lophocrinus*, incl. ? *Carduocrinus*; loc. cit.
- †*Lyriocrinus*, incl. *Marsupiocr.* Hall; BATHER (19) p. 200. *L. melissa*, redescr.; WELLER (348) p. 91, pl. iii. *L. cf. melissa*; WILLIAMS (352) p. 55.
- †*Macarocrinus*; BATHER (19) p. 166, fig. lxxix.
- †*Macrocrinus*; op. cit. p. 168.
- †*Macrostylocrinus*; op. cit. p. 162. *M. obconicus*, n. sp., Bridgeport, Ill. (p. 95, pl. iv); *M. semiradiatus* Hall (as *Saccoocr.*) redescr., perhaps incl. *M. fasciatus* Hall (p. 94, pl. iv); *M. striatus*, redescr. from Chicago area, more slender than original Indiana specimens, those from Racine figd. by Hall are not this sp. (p. 93, pl. iv); *M. subglobosus*, n. sp., Bridgeport, Ill. (p. 96, pl. iv): all Niagara; WELLER (348).
- †“*Majesticrinus*” [nom. nud. or ? err. pro *Megistocrinus*], Burlington, Iowa; ORCUTT (252).
- †*Mariocrinus*, incl. *Zenkericrinus*; BATHER (19) p. 161, fig. lxxiv. *M. melocrinoides*, vide sub *Zenkericr.* *M. obpyramidalis*, vide sub *Melocrinus*. *M. plumosus*, *M. ramosus* and *M. stoloniferus*; SCHUCHERT (303) p. 279.
- †*Marsipocrininae*, diagnosis; BATHER (19) p. 156.
- †*Marsipocrinus*, name preferred to *Marsupiocr.* Phill. non Blainv., incl. *Cypellocr.* vel *Cupellaeacr.* Shum. non Steininger, discussed; loc. cit. and fig. lxx. *M. chicagoensis*, n. sp., Niagara, Chicago; WELLER (348) p. 138, pl. xiv. *M. tentaculatus*; SCHUCHERT (303) p. 279.
- †*Marsupiocrinus* Blainv., vide *Marsupites*.
- †*Marsupiocrinus* Phill., vide *Marsipocr.*
- †*Marsupiocrinus* Hall, vide *Lyriocrinus*.
- †*Marsupites*, incl. *Sitularia* and *Marsupiocr.* Blainv.; BATHER (19) p. 185, figg. xvii, civ. *M. ornatus*; SCHLUETER (297) pp. 418, 420. *M. testudinarius*; SHEPPARD (305) p. 67: as zonal fossil; ROWE (288) pp. 296, 301, 333, 348.
- †*Marsupitidae*, diagnosis; BATHER (19) p. 184.
- †*Mustigocrinus*; op. cit. p. 179, fig. xlvi.
- †*Medusacrinus* Austin [syn. of *Platyer.*]; op. cit. p. 203.
- †*Megistocrinus*, descr.; op. cit. p. 168, fig. xlvi. *M. nodosus*; NORTON (248) p. 451. Vide etiam *Majesticr.*
- †*Melocrinidae*, diagnosis; BATHER (19) p. 161.

- [†]*Melocrinoidea*, Sub-order, diagnosis, divided into families *Glyptocrinidae*, *Melocrinidae*, *Patellocrinidae*, *Clonocrinidae*, *Eucalyptocrinidae*, and *Dolatocrinidae*; BATHER (19) p. 160.
- [†]*Melocrinus*, incl. *Astrocr.* Conr., *Turbinocr.*, *Castanocr.*, *Cytoocr.*, and *Clonocr.* Oehl., relations to *Mariacr.*; op. cit. p. 161, fig. lxxiv. *M. nobilissimus*; SCHUCHERT (303) p. 279. *M. obpyramidalis*, redescr.; WELLER (348) p. 97, pl. iii: evidence of fixed brachials suggests it is *Mariacr.*; BATHER in Review. *M. pachydactylus*, and *M. paucidactylus*; SCHUCHERT (303) p. 279. *M. verneuili*, vide *Thysanocr. pentangularis*.
- [†]*Merocrinus*; BATHER (19) p. 178, fig. xcvi. *M. sp.*; WINCHELL & ULRICH (357) p. cxxii.
- [†]*Mesocrinus*, descr.; BATHER (19) p. 194.
- [†]*Mesopilocrinus* Kon.; op. cit. p. 188.
- [†]*Mesopilocrinus* Quenst.; vide *Acrochordocr.*
- Metacrinus*; BATHER (19) p. 183, fig. ci. *M. sp.* nondescr., Nias Channel; CHUN (63) p. 362.
- Microcrinus*, syn. of *Attelecrinus*; BATHER (19) p. 203.
- [†]*Microporcinus*, vide *Cyathidium*.
- [†]*Millericrinus*, incl. *Cerioocr.* Desor and *Pomatocr.*, descr.; BATHER (19) p. 191, figg. xvii, lii. *M. sp.*; KILLIAN & LORY (170) pp. 33, 37. *M. sp.* indet., stem-fragments; also a root of another (p. 15, pl. iii); *M. sp.* indet., Kimmeridgian (p. 16); *M. affinis*, variations from type (p. 12); LISSAJOUS (195). *M. alternatus*, vide *M. dudressieri*. *M. beaudouini*, vide *M. rotiformis*. *M. caraboevi?*, descr., differences from type perhaps due to greater age (p. 6, pl. i); *M. cf. charpyi* (p. 12); *M. convexus* (p. 10); *M. dilatatus?*, a radial (p. 13); *M. dudressieri*, discussed, probably restr. to specimens from Lower Rauracian, perhaps = *M. alternatus* (p. 10, pl. ii); LISSAJOUS (195). *M. echinatus*; KOBY (177) p. 209. *M. cf. elatus*, stem-fragments (p. 15, pl. iii); *M. escheri*, columnals figd., ? 2 spp. (p. 11, pl. ii); *M. etalloni* (p. 12); *M. goupilianus* (p. 8); LISSAJOUS (195). *M. granulosus*; KOBY (177) p. 196; LISSAJOUS (195) p. 5. *M. cf. granulosus*, stem-fragments descr.; loc. cit. and pl. i. *M. horridus*; KOBY (177) p. 209; LISSAJOUS (195) p. 11. *M. knorri*, discussed, probably restr. to specimens of Birmensdorf age (pp. 9, 10, pl. ii); *M. nodotianus* (p. 12); *M. perrauti*, n. sp., allied to *M. belnenensis*, Lower Rauracian of Lacrost near Tournus (p. 13, pl. iii); *M. pilleti*, root figd. (p. 7, pl. i); LISSAJOUS (195). *M. pratti*, incl. *Gnathocr. fusiformis*; BATHER (19) p. 203. *M. regularis* (p. 11); *M. rotiformis*, also a specimen apparently identical with *M. beaudouini*, which may therefore be a syn. of this sp. (p. 8, pl. i); *M. thiollierei*, the types are not Oxfordian but from zone of *Cidaris florigemma* (p. 11); LISSAJOUS (195).
- [†]*Missouricrinus*, doubtfully referred to *Belemnocrinidae*; BATHER (19) p. 153.
- [†]*Mitrocrinus*, discussed; op. cit. p. 203.
- Monocyclica*, Sub-class, diagnosis, and classification under Orders *Inadunata*, *Adunata*, and *Cameras*; op. cit. p. 144 et seqq.
- [†]*Mycocrinus*, redescr.; op. cit. p. 150, fig. lxii.
- [†]*Myelodactylus*, name preferred to *Herpetocrinus* (q. v.), and *M. bridgeportensis*, redescr.; WELLER (348) p. 69, pl. xv.
- [†]*Mytillocrinus*, incl. *Ancyrocrinus*; BATHER (19) p. 177, fig. li.
- [†]*Nanocrinus*; op. cit. p. 177.
- [†]*Nematocrinus*, vide *Catillocrinus*.
Neocrinoidea Wachsmuth; BATHER (19) p. 139.
Neocrinus, vide *Isocrinus*.
- [†]*Nipterocrinus*, referred to *Ichthyocrinidae*; BATHER (19) p. 188.
- [†]*Ohiocrinus*, discussed; op. cit. p. 146.

- †*Ollacrinus*, vide *Gilbertocrinus*.
 †*Oncocrinus*, vide *Pycnosaccus*.
 †*Onychocrinus*, descr., arm-branching; BATHER (19) p. 190, figg. xvii, cx.
 †*Ophiocrinus* Ang., vide *Streptocrinus*.
 †*Ophiocrinus* Charlesworth, vide *Herpetocrinus*.
 †*Ophiocrinus* Salter; BATHER (19) p. 201.
Ophiocrinus Semper, vide *Eudocrinus*.
 †*Orthocrinus*; BATHER (19) p. 198.
 †*Ottawacrinus*; op. cit. p. 178, fig. xcvi.
 †*Pachyantedon*; op. cit. p. 203.
 †*Pachyocrinus*; loc. cit.
 †*Pachylocrinus*, vide *Woodocrinus*. *P.* sp.; JAEKEL in FRECH (124) p. 204, fig. 45 [This name is syn. of *Woodocr.*, but the drawing is not like spp. of that genus.]
 †*Pachyocrinus*; BATHER (19) p. 203.
 †*Palaeocrinidae*, diagnosis, genera descr.; op. cit. p. 172.
 †*Palaeocrinoidæ* Wachsmuth; op. cit. p. 139.
 †*Palaeocrinus*, redescr.; op. cit. p. 172, fig. lxxxv. *P.* sp.; WINCHELL & ULRICH (357) p. cxxiii.
 †*Parisocrinus*; BATHER (19) p. 173, fig. xxvi. *P. subramosus*, Miller & Gurley [sub *Poteriocr.*], pores in anal sac; SPRINGER (314) p. 145, pl. xvi: difficulty of regarding this as *Parisocr.*; BATHER (22) p. 307.
 †*Patellocrinidae*, diagnosis, relations discussed; BATHER (19) p. 161.
 †*Patellocrinus*; op. cit. p. 162, fig. lxxv.
 †*Pendulocrinus*, vide *Calceocrinus*.
Pentacrinidae, diagnosis, genera discussed; BATHER (19) p. 182.
Pentacrininae, diagnosis, genera discussed; loc. cit.
Pentacrinus Auctt. non Blumenbach, vide *Isocrinus*. †*Pentacr.* s. str., incl.
Polycerus, *Extracr.*, ?*Chladocr.*, descr.; BATHER (19) p. 182 fig. ci.
 †*Extracr.* [i.e. *Pentacr.*] sp. l columnals; LISSAJOUS (195) p. 24. †*P.* sp. columnals (*Balanocr.* or *Extracr.*) from Leila Mts.; BONNEY (43) p. 226. †*P.* [= *I.*] sp.; CARTER (57). †*P.* [= *I.*] sp.; KILLAN & LOBY (170) pp. 51, 56. †*P.* [= *I.*] sp.; STILLE (319) pp. 8, 10, 12. †*P.* [= *I.*] sp.; UHLIG (334) p. 9. *P.* [i.e. *I.*] sp. as zonal fossil; ROWE (288) pp. 313, 317. *P.* [i.e. *I.*] sp. nondescr., 750 and 1280 metres, Siberut Strait, L. DOEDERLEIN photo, but no description; CHUN (63) pp. 364, 486. *P.* [i.e. *I.*] *aguazu*; BRYDONE (51) p. 12: incl. *P. kloedeni* as circals; DEECKE (82) pp. 71, 72. †*P.* [i.e. *I.*] *amblyscalaris*; HUENE (166) p. 355: LISSAJOUS (195) p. 20. †*Cainocr.* [i.e. *Isocr.*] *andreae*; HUENE (166) p. 347. †*P.* [= *I.*] *astericus*; DARTON (79) p. 388: crown discovered; KNIGHT (174) p. 386: columnals described, and compared with *P. subangularis*; LOGAN (205) pp. 113, 119, pl. xxv. †*Extracr.* [i.e. *P.*] *babeaudi*; LISSAJOUS (195) p. 24. †*P.* [= *I.*] *bajocensis*; op. cit. p. 19: STRUEBIN (324) pp. 335, 337: GREPPIN (138) p. 191. †*P.* aff. *bajocensis*, stem-fragment, Callovian or Bajocian, Franz Josef Land; POMPECKJ (268) pp. 51, 120, pl. i. †*P.* [= *I.*] *basiliiformis*; LISSAJOUS (195) p. 18: STILLE (319) p. 13: var. *subrotunda* Quenst., and var. ?, Mte. Domaro; BETTONI (34) pp. 8, 9, text-fig. †*P.* [i.e. *I.*] *berthae*, vide *P. gasteraldii*. †*P.* [i.e. *I.*] *broni*; BRYDONE (51) p. 12; DEECKE (82) pp. 55, 71. †*P.* [= *I.*] *bryani*; CLARK (66) p. 339. †*Extracr.* [i.e. *P.*] *buchaganensis*; LISSAJOUS (195) p. 24: HUENE (166) p. 362. †*P.* [= *I.*] *cingulatus*; LISSAJOUS (195) p. 19. †*P.* [= *I.*] *crista-galli*; loc. cit.: GREPPIN (138) p. 190: STRUEBIN (324) pp. 335, 337. †*Extracr.* [i.e. *P.*] *dargnieri*; LISSAJOUS (195) p. 24. †*P.* [i.e. *I.*] *desori*; HUENE (166) p. 365. †*P.* [i.e. *I.*] *gasteraldii*; incl. *P. miocenicus* Lor. and *P. berthae* Nicolas, columnals redescr., list of localities; NOELLI (243) p. 5, pl. i. †*P.* [= *I.*] cf. *geisingensis*; LISSAJOUS (195) p. 19. †*P.*

- [=I.] *gracilis*; WALTON (346). +P. [=I.] *jurensis*; LISSAJOUS (195) p. 18. +P. [=I.] *guirandi*; op. cit. p. 20. +P. *kloedeni*, vide *P. agassizi*. +P. *loroli*, n. sp., Upper Helvetician, Piedmont, columnals only [apparently *Balanocr.*]; NOELLI (243) p. 10, pl. i. +P. [=I.] *mieryensis*; LISSAJOUS (195) p. 18. +P. *miocenicus*, vide *P. gasterulus*. +P. [i.e. I.] *neocomiensis*; KILIAN & LORY (170) p. 52. +P. [=I.] *nicoleti* (p. 19). +P. [=I.] *oceani* (p. 18). +P. [=I.] *oxyacalaris* (p. 19). +P. [=I.] *pellati* (p. 20); LISSAJOUS (195). +P. [i.e. *Balanocr.*] *pentagonalis*; HUENE (166) p. 355. +P. [=I.] *praeextus*; LISSAJOUS (195) p. 18. +P. [=I.] *propinquus*; BROILI (48) p. 369: O. GORDON (132) p. 340 and (249) p. 309. +P. [=I.] *peilonotii*; LISSAJOUS (195) p. 17: ENGEL (106) p. 240: STILLE (319) p. 7. +P. [=I.] *rollieri*; LISSAJOUS (195) p. 18. +P. [=I.] *scalaris*; STILLE (319) p. 13. +P. [i.e. *Balanocr.*] *subbasaltiformis*; STOLLEY (320) pp. 110, 113. +P. [=I.] *subnudatus*; LISSAJOUS (195) p. 17: STILLE (319) pp. 13, 14. +P. [=I.] *tiroensis*; O. GORDON (132) p. 340, and (249) p. 309. +P. [=I.] *tuberculatus*; LISSAJOUS (195) p. 17: STILLE (319) pp. 9, 10. +P. [=I.] *wirtembergicus*; GREPPIN (138) p. 202. P. [=I.] *wyville-thomsoni*, 1425 metres, Azores; RICHARD (282) p. 78.
- +*Pentagonites*; BATHER (19) p. 203.
- +*Periechocrinidae*, diagnosis, genera discussed; op. cit. p. 168.
- +*Periechocrinus*, incl. *Geocr.*, *Saccocr.*, *Pyxidocr.*, ? *Trochocr.*, ? *Pradocr.*, discussed; loc. cit. *P. chicagoensis*, n. sp., Niagaraan, Bridgeport & Joliet, Ill. (p. 131, pl. xiii); *P. egani*, redescri., distinguished from *P. infelix* (p. 136, pl. xiii); *P. infelix*, redescri. (p. 134, pl. xiii); *P. marcouanus*, redescri. (p. 131, pl. xii); *P. necis*, redescri. (p. 133, pl. xiii); *P. uniformis*, incl. *P. pyriformis* S. A. M., redescri. (p. 135, pl. xiii); WELLER (348).
- +*Periglyptocrinus*; BATHER (19) p. 161.
- +*Perischodomus magnus*, syn. of *Adelocr. hystrix*; op. cit. p. 203.
- +*Petalocrinidae*, diagnosis; op. cit. p. 175.
- +*Petalocrinus*, reconstruction; op. cit. p. 175, fig. xci.
- +*Petinocrinus*; op. cit. p. 203.
- Phanogenia*, vide *Actinometra*.
- +*Phialocrinus* Eichw.; BATHER (19) p. 203.
- +*Phialocrinus* Trautsch.; op. cit. p. 181, fig. c. *P. magnificus*, redescri., measurements; BEEDDE (29) p. 36, pl. vi.
- +*Phillipsocrinus*; BATHER (21) p. 108: systematic position discussed; BATHER (19) p. 170.
- +*Philocrinus*, vide *Woodocrinus*.
- +*Phimocrinus*, discussed, *P. jouberti*, bisected radials; BATHER (19) p. 152.
- +*Phoenicocrinus*, vide *Carpocrinus*.
- +*Phyllocrinus*; BATHER (19) p. 197. *P. sp.* ?, stem-fragment; LISSAJOUS (195) p. 3, pl. i.
- +*Physetocrinus*; BATHER (19) p. 170.
- Phytocrinus*, vide *Antedon*.
- Pictetocrinus*, vide *Isocrinus*.
- Pinnata* P. H. Carp. (p. 140), as Grade of *Flexibilita*, diagnosis, division into families *Apocrinidae*, *Bourgueticrinidae*, *Antedonidae*, *Atelocrinidae*, *Actinometridae*, *Thaumatocrinidae*, *Eugeniacrinidae*, *Holopodidae*, and *Eudesicrinidae* (pp. 191 et seqq.); BATHER (19).
- +*Pionocrinus*, vide *Carpocrinus*.
- +*Pisocrinidae* [*Triacrinidae* Jaek.], diagnosis and description of genera; BATHER (19) p. 149: emend. diagnosis, incl. *Pisocr.*, *Triacr.*, and *Cicerocr.*; SOLLAS (312) p. 270: variation of arm-structure, its limits in this fam. preclude admission of *Cicerocr.*; BATHER in discussion.
- +*Pisocrinus*, relations to allied genera; BATHER (19) p. 149, fig. lxii:rediagnosed; SOLLAS (312) p. 270: united with *Triacrinus*, whi

- name has priority; JAEKEL (168) p. 482. *P.* sp. [? *pilula*], variation in basals; SOLLAS (312) p. 268, text-fig. 4. *P. flagellifer* [syn. of *pilula*]; ZITTEL & EASTMAN (369) p. 135, fig. 237: incorrectly oriented; BATHER in Reviews of this and of WELLER (348). *P. milligani* Mill. & Gurl. is syn. of *P. quinquelobus*; BATHER in Review of WELLER (348). Vide etiam *Triacrinus*.
- +*Platycrinidae*, diagnosis, discussion of genera, divided into sub-families, *Coccoocrininae*, *Marsipocrininae*, *Platycrininae*; BATHER (19) p. 156.
- +*Platycrininae*, diagnosis; op. cit. p. 157.
- +*Platycrinus*, incl. *Centrocr.*, *Pleurocr.*, *Edwardsocr.*, descr., ontogeny; loc. cit. and figg. xlxi, lxxi. *P.* aff. *arenosus*; PEACH (260) p. 223. *P.* (?) *dubius*, n. sp., Niagaran, Bridgeport, Ill., of strikingly Inadunate appearance; WELLER (348) p. 140, pl. xiv: probably one of the *Coccoocrininae*; BATHER in Review. *P. huntevillae*, young; BATHER (19) p. 158, fig. lxxi. *P. trigintidactylus*; PEACH (260) p. 223.
- +*Platyphaerites*; BATHER (19) p. 203.
- +*Pleurocrinus*, vide *Platycrinus*.
- +*Plicatocrinidae*, diagnosis, genera described; BATHER (19) p. 153.
- +*Plicatocrinus*, descr.; loc. cit. and fig. lxvi.
- +*Polycerus*, vide *Pentacrinus*.
- +*Polypeltis*; BATHER (19) p. 162.
- +*Pomatocrinus*, vide *Millericrinus*.
- +*Porocrinus* Dittm. = *Traumatoct*, vide *Encriinus*.
- +*Porocrinus* Bill, redescr.; BATHER (19) p. 172, fig. lxxxvi. *P.* sp.; WINCHELL & ULRICH (357) p. cxxiii. *P. shawi*, n. sp., Trenton Limest., Silliman's Fossil Mt., Baffin Land; SCHUCHERT (302) p. 155, pl. xii. *P. smithi*, partial reconstruction; BATHER (19) p. 173, fig. lxxxvi.
- +*Poteriocrinus*; op. cit. p. 180, fig. xcix. *P.* sp., similar to Salt-range sp., columnals; FRECH (124) p. 285. *P. crassus* et aff. *crassus*; PEACH (260) p. 223. *P. doris*, deep folds in anal sac, but no pores observed; SPRINGER (314) p. 149. *P. dudleyensis* Austin, not a *Cyathocr.* as supposed by WELLER (348); BATHER in Review. *P. nuciformis* et aff. *nuciformis*; PEACH (260) p. 223. *P. quenstedti* Golowkinsky; ENDERLE (105) p. 93, pl. viii. *P. tenuis* and *P. aff. ventricosus*; PEACH (260) p. 223.
- +*Pradocrinus*, vide *Periechocrinus*.
- +*Prodivocrinus*, vide *Euchirocrinus*.
- Promachocrinus*, discussed; BATHER (19) p. 195.
- +*Proteuryale*; op. cit. p. 203.
- Pterocoma*, syn. of *Antedon*; loc. cit.
- +*Pterotocrinus*, incl. *Asterocr.* Lyon, discussed; op. cit. p. 159.
- +*Psychocrinus*; op. cit. p. 198.
- +*Pycnocrinus*, vide *Glyptocrinus*.
- +*Pycnosaccus*, incl. *Oncocr.*; BATHER (19) p. 187, fig. cvii. *P. americanus*, n. sp., Niagaran, Hawthorn, Ill., also, lapsu calami, as *P. ornatus*; WELLER (348) p. 149, pl. xv.
- +*Pyxidocrinus*, vide *Periechocrinus*.
Regularia Carpenter & Etheridge; BATHER (19) p. 139.
- +*Reteocrinidae*, restricted to *Reteocr.*, diagnosis; op. cit. p. 198.
- +*Reteocrinus*, descr.; loc. cit. and fig. cxxii.
- +*Rhadinocrinus*; BATHER (19) p. 179.
- +*Raphanocrinus*, incl. *Coelocr.* Salter; op. cit. p. 200.
- +*Rhipidocrinus*; op. cit. p. 201.
Rhizocrinus, descr.; op. cit. p. 194, figg. x, xxiii, xlxi, cxvi: vide etiam *Conocrinus*. *R.* sp. nondescr., 1644–1668 metres, Somali coast, L. DOEDERLEIN photo, but no description; CHUN (63) pp. 487, 488. *R. rausoni*, fine specimen, 1425 metres, Azores; RICHARD (282) p. 78.

- [†]*Rhodocalix*; BATHER (19) p. 203.
- [†]*Rhodocrinidae*, diagnosis, genera discussed; op. cit. p. 199.
- [†]*Rhodocrinus*; op. cit. p. 201.
- [†]*Rhopalocrinus*, referred provisionally to *Flexibilia Impinnata*, possibly *Dicyclina Indunata*; BATHER (19) p. 191.
- [†]*Saccocoma*, incl. *Euryale*, habits; op. cit. p. 154, fig. lxviii.
- [†]*Saccocomidae*, diagnosis; op. cit. p. 154.
- [†]*Saccocrinus*, vide *Periechocrinus*. *S. semiradiatus*, vide sub *Macrostylocrinus*.
- [†]*Sagenocrinidae*, diagnosis, and *Sagenocrinus*; BATHER (19) p. 190, fig. xxiva.
- [†]*Sampsonocrinus*, perhaps an abnormal *Actinocr.*; op. cit. p. 170.
- [†]*Scaphiocrinidae*, diagnosis; BATHER (19) p. 180.
- [†]*Scaphiocrinus*, incl. *Hydriocr.* and *Abrotocr.*; loc. cit. and fig. xxvi. *S.?* sp.; FOX (121) p. 146, and (122) p. 346. *S. arboreus*, pores in anal sac; SPRINGER (314) p. 147, pl. xvi. *S. hemisphaericus*; PROSSER (272) p. 163. *S. missouriensis* (p. 144), *S. swallovi* (p. 143), *S. unicus* (p. 142): pores in anal sac; SPRINGER (314) pl. xvi. *S.?* *washburni*, n. sp., Upper Coal Measures, Osage Coal, Topeka, Kansas, type at Washburn College, "on the top of the sac there seems to be a madreporite" [if so it is not a Poteriocrinid, as supposed]; BEEDE (28) p. 21, pl. v, fig. 2: redescr., measurements, BEEDE (29) p. 27, pl. vi.
- [†]*Schizocrinus*, incl. ? *Scyphocr.* Hall; BATHER (19) p. 161.
- [†]*Sclerocrinus*, vide *Gammaocrinus*.
- [†]*Scoliocrinus*; BATHER (19) p. 178.
- [†]*Scyphocrinus* Hall non Zenker, vide *Schizocrinus*.
- [†]*Scyphocrinus* Zenker, incl. *Camarocr.* and *Lobolithus*; BATHER (19) p. 161: its systematic position in *Melocrinidae*, diagnosis (p. 114), morphology of fixed brachials and pinnulars, their relations to the tegmen (pp. 115-119, fig. 7), tegmen, stem, and roots (p. 119); BATHER (21). *S. elegans*, var. ? *polonica* [? nom. nud.]; GUERICH (146) pp. 368, 373. *S. excavatus* Waag. & Jahn is identical with *S. elegans* Zenker, but *S. excavatus* Schloth. is not specifically determinable, the action of W. & J. criticised but accepted "for the sake of concord" (p. 115): var. *schlotheimi*, tertibrachs and fixed pinnulars (p. 117, fig. 7); BATHER (21).
- [†]*Scytalecrinidae*, diagnosis; BATHER (19) p. 180.
- [†]*Scytalecrinus*, incl. *Dactylocrin.* Slad.; loc. cit. *S.?* sp. indet. (p. 143), *S. hoveyi* (p. 145), *S. validus* (p. 141), *S. van hornei* (p. 145): pores in anal sac; SPRINGER (314) pl. xvi.
- Semarticulata* Miller; BATHER (19) p. 138.
- [†]*Shumardocrinus*, syn. of *Steganocr. concinnus*; op. cit. p. 203.
- [†]*Sicyocrinus*, vide *Botryocrinus*.
- [†]*Siphonocrinus*, descr.; BATHER (19) p. 199. *S. nobilis*; NORTON (248) p. 438: redescr., variation in interbrachial areas, iBr resting on BB as in *Rhodocrinidae*; WELLER (348) p. 86, pl. ii.
- [†]*Sitularia*, vide *Marsupites*.
- [†]*Solocrinus*, syn. of *Antedon*; BATHER (19) p. 203.
- [†]*Solanocrinus*, vide *Antedon*.
- [†]*Sphaerocrinidae*, diagnosis; BATHER (19) p. 173.
- [†]*Sphaerocrinus* M. & W., vide *Coelocrinus*.
- [†]*Sphaerocrinus* Roemer; BATHER (19) p. 173. *S.?* sp.; FOX (121) p. 147 and (122) p. 351.
- [†]*Sphenocrinus*; BATHER (19) p. 203.
- [†]*Spiridiocrinus*, vide *Trybliocrinus*.
- [†]*Steganoocrinus*; BATHER (19) p. 170.
- [†]*Steliocrinus*, incl. ? *Harmocr.*; op. cit. p. 161, fig. lxxv.
- [†]*Stemmatocrinus*; op. cit. p. 181.
- [†]*Stenocrinus*, vide *Heterocrinus*.

- †*Stephanocrinidae*, diagnosis ; BATHER (19) p. 145.
 †*Stephanocrinus*, incl. *Rhombifera mira* (p. 145), redescr., relations to *Blastoidea* and *Crinoidea* (pp. 96, 145, fig. ii); op. cit. *S. angulatus* GRANT (133). *S. osgoodensis*; WELLER (348) p. 151, pl. xv.
 †*Stereocrinus*; BATHER (19) p. 164. *S. triangulatus*; NORTON (24) p. 451.
 †*Stomatocrinidae* Wachsmuth; BATHER (19) p. 139.
 †*Storingocrinus*, "angle of the columnar canal radial in position [erroneous statement, taken from Wachsmuth & Springer; the canal is round, as descr. by Schultze]; op. cit. p. 152.
 †*Streptocrinus*, incl. *Ophiocr. Ang.*; op. cit. p. 179: the "false pinnules" of Bather owe their position to the fusion of brachials; JAEKEL (16) p. 373.
 †*Strophocrinus*; BATHER (19) p. 172.
 †*Strotocrinus*, discussed; op. cit. p. 170. "*Strocotimus*" [= *Strotocrinus*] Burlington, Iowa; ORCUTT (252).
 †*Stylocrinus*, discussed; BATHER (19) p. 152.
 †*Sycocrinus*:—*S. anapeptomenos* is a *Hypocrinus*; *S. clausus* is a *Lagenocrinus*; *S. jacksoni* is a *Cryptocrinus*, vide iv, g: op. cit. p. 203.
 †*Symbathocrinidae*, diagnosis, genera discussed; op. cit. p. 152.
 †*Symbathocrinus*; loc. cit. and fig. lxv: vide etiam *Crateriocrinus*.
 †*Symphtycrinus*, vide *Eugeniacrinus*.
 †*Synerocrinus*, descr., probably incl. *Taxocr. nobilis* Kon.; *S. incurva* original drawings: BATHER (19) p. 190, fig. cxi.
 †*Synyplocrinus*, vide *Bursacrinus*.
 †*Syringocrinus*, is stem of *Dendrocystis*, vide iv, g; BATHER (19) p. 203.
 †*Talarocrinus*; op. cit. p. 159.
 †*Tanaocrinidae*, diagnosis, and *Tanaocrinus*, discussed; op. cit. p. 164 fig. lxxviii.
 †*Taxocrinidae*, diagnosis, genera discussed; op. cit. p. 188.
 †*Taxocrinus*, incl. *Isocr. Phill.*, *Cladocr. Aust.*, *Euryalecr.*, *Forbesior* Kon., diagnosed; op. cit. p. 189, figg. xxxvii, cx. *T. nobilis* Kon., vide *Synerocrinus*.
 †*Technocrinus*; BATHER (19) p. 163. *T. sp.* nondescr., Monterey formation, Maryland, *T. andrewsi*, *T. sculptus*, *T. spinulosus*, *T. striatus*; SCHUCHERT (303) pp. 292, 313. *T. striatus* Hall, probably = *T. andrewsi*; WHITFIELD & HOVEY (351) p. 199.
 †*Teleocrinus*, incl. *Caluthocr.* pars Hall, discussed; BATHER (19) p. 170.
 †*Tessellata* Zittel; op. cit. p. 139.
 †*Tessellata* Müller; loc. cit.
Testacea Müller; op. cit. p. 138.
 †*Tetanocrinus* vide *Dolichocrinus*.
 †*Tetracrinus* Austin; BATHER (19) p. 203.
 †*Tetracrinus* Münst., origin as a sport; op. cit. p. 153: Jaekel's views as to basals misrepresented; BATHER in Review of ZITTEL & EASTMAN (369). *T. maniliformis*; LISSAJOUS (195) p. 3.
 †*Tetramerocrinus*, syn. of *Melocr.* or *Mariacr.*; BATHER (19) p. 204.
 †*Thalamocrinus*, discussed; loc. cit.
 †*Thalloocrinus*, vide *Hapalocrinus*.
Thaumatocrinidae, diagnosis, and *Thaumatocrinus*; BATHER (19) p. 196 fig. cxix.
 †*Thenarocrinus*; op. cit. p. 179, fig. xcvi.
 †*Thiollericrinus*, discussed; op. cit. p. 195. *T. algarbiensis*; CHOFFAT (62) p. 185. *T. flexuosus*, original figure; *T. ribeiroi*, reconstruction; BATHER (19) p. 195, fig. cxvii.
 †*Thylacocrinus*, descr., *T. vannioti*, original drawing; BATHER (19) p. 200 fig. cxvi.
 †*Thysanocrinus*, vide etiam *Dimerocrinus*. *T. egani*, redescri., possibly only

- young of another sp. (p. 74); *T. occidentalis*, redesc., variety from Bridgeport (p. 73); *T. pentangularis*, redesc., incl. *Melocr. verneuili* Hall, abnormal anal area (p. 70): WELLER (348) pl. i.
- †*Tormocrinus*; BATHER (19) p. 197.
- †*Torynocrinus*, incl. *Cyrtocr.* and ? *Hemicr.*; loc. cit.
- †*Traumatocrinus*, vide *Enocrinus*.
- †*Trematocrinus*, vide *Gilbertocrinus*.
- †*Triacrinus*, incl. *Trichocrinus*, relations to *Pisocr.*; BATHER (19) p. 149, fig. Ixii: incl. *Pisocr.*, the spp. form two series, the *pilula* type and the *pocillum* type (p. 482), *T. pilula*, analysis of cup, variation in position of small basal (p. 483, fig. 5); JAERKEL (168). Vide etiam *Pisocr.*
- †*Trianites*; BATHER (19) p. 204.
- †*Tribrachiocrinus*, incl. *Pentadia*, pars; op. cit. p. 181, fig. c.
- †*Trichocrinus*, vide *Triocrinus*.
- †*Trigonocrinus*; BATHER (19) p. 197.
- †*Triplaricrinus* = *Hexacr. pateraeformis*; op. cit. p. 204. *Trochita*; loc. cit.
- †*Trochocrinus*, vide *Periechocrinus*.
- †*Trybiocrinus*, incl. *Spiridiocrinus*; BATHER (19) p. 163.
- †*Turbinocrinus*, vide *Melocrinus*.
- †*Uintocrinidae*, diagnosis; BATHER (19) p. 183.
- †*Uintocrinus*, infrabasals; loc. cit. and fig. ci.ii. *U. sp.* nondesc., England, as zonal fossil; ROWE (288) pp. 298 (text-fig.), 333, 347. *U. socialis*, tegmen; SPRINGER (315): distrib., mode of occurrence, slab with 220 calyces, of diameters 20 to 70 mm., mode of exhibition; BEECHER (27). *U. westfalicus*; SCHLUETER (297) p. 418.
- †*Ulocrinus*; BATHER (19) p. 181, fig. xxix.
- †*Uperocrinus*, vide *Hyperocrinus*.
- †*Vasocrinus*; BATHER (19) p. 179.
- †*Vletacrinus*, discussed; op. cit. p. 204. *V. haueri* Waagen & Jahn's account criticised, doubtless a Monocyclic Camerate, and probably a Batocrinoid, why not a syn. of *Bohemianocr.*, or even of *B. pulvereus*?; BATHER (21) p. 109, fig. 4.
- †*Woodocrinus*, incl. *Philocr.* and *Pachylocr.*; BATHER (19) p. 180.
- †*Xenocrinidae*, diagnosis, with description of genera; op. cit. p. 165.
- †*Xenocrinus* Jahn, probably *Mariacrinus*; op. cit. p. 204.
- †*Xenocrinus* Miller; op. cit. p. 165, fig. lxxviii.
- †*Zeacrinus*; op. cit. p. 180, fig. xcix. *Z. ? mucrospinus*; PROSSER (272) pp. 153, 155, 157, 161, 165. *Z. ? robustus*, n. sp., Upper Coal Measures, Kansas City, type at Kansas Univ.; BEEDE (28) p. 22, pl. v, fig. 1: redesc., measurements, type at Kansas Univ.; BEEDE (29) p. 29, pl. vi.
- †*Zenkericrinus melocrinoides*, is a *Mariacr.* (q.v.); BATHER (21) p. 111.
- †*Zophocrinidae*, established for *Zophocrinus*; BATHER (19) p. 150.
- †*Zophocrinus howardi*, redesc. with original fig. lxiii; loc. cit.: internal casts; WELLER (348) p. 152, pl. xv.

†G. CYSTIDEA

(including EDRIOASTEROIDEA).

Cystidea, diagnosis (p. 39), classification (p. 40), severance of *Edrioasteroidea*, leaving Orders *Amphoridea*, *Diploporida*, *Rhomboidea*, and *Aporita*; BATHER (19). *Edrioasteroidea*, incl. *Thyroida*, *Agelacrinoidea*, *Cystasteroidea*, *Thecoidea*,

† All extinct.

- diagnosis, divided into Families, *Agelocrinidae*, *Cyathocystidae*, *Easteridae*, and *Steganoblastidae*; op. cit. p. 205 et seqq.
- Cystidea* of Bohemia after Barrande, revised according to JAEKEL (Zool. Rec. 1899, comprise 27 *Cystidea*, 7 *Carpoidea* [*Anomalocystidae*], 4 *Thecoidea* [*Edrioasteroidea*], 2 *Blast.*, and 10 *Crin.*; PERNER (26) Cystid genus indet., a Diplopore; GUERICH (146) p. 370.
- Acanthocystis*; BATHER (19) p. 46.
- Achradocystis*, referred to *Comarocystidae*; op. cit. p. 55.
- Aesiocystis*, descr., referred to *Edrioasteridae*; op. cit. p. 208.
- Aethocystis*, referred to *Tiarocrinidae*; op. cit. p. 57.
- Agelocrinidae*, diagnosis, genera described; op. cit. p. 207.
- Agelocrinus*, descr.; loc. cit. and fig. iii. *A. buchananus*, vide sub *Edrioasteridae* A. sp. (p. cxxiii), *A. marginatus* (pp. xciv, xcvi); WINCHELL & UL (357).
- Allocystis*, referred to *Sphaeronidae*; BATHER (19) p. 72.
- Amorphocystis*, vide *Caryocystis*.
- Amphoridea*, diagnosis and systematic account; BATHER (19) p. 43 et
- Amygdalocystis florealis*, original drawing; op. cit. p. 57, fig. xix.
- Anomalocystidae*, diagnosis and description of genera; op. cit. p. 49 et
- Anomalocystis*, anus described; ZITTEL & EASTMAN (369) p. 186; anus is unknown; BATHER in Review. *A. cornutus* may be *A. cystis*; BATHER (19) p. 51: SCHUCHERT (303) p. 280. *A. dispa*, op. cit. pp. 292, 313: probably *Placocystis*; BATHER (19) p. 51.
- Anthocystis*, vide *Callocystis*.
- Apiocystis*, vide *Lepadocrinus*.
- Aporita*, provisional Order, diagnosed and restricted; BATHER (19) p.
- Aporocrinus gyratus* Austin, is an *Agelocrinid*; op. cit. p. 201.
- Arachnocystis*, redescr.; op. cit. p. 54.
- Archegocystis*; BATHER (19) p. 73.
- Aristocystidae*, diagnosis, and account of genera; op. cit. p. 44 et seqq.
- Aristocystis*, redescr.; loc. cit. and figg. i-iii. *A. bohemicus*; ZELIZKO (p. 90).
- Ascocystis*, probably a Camerate *Crinoid*; BATHER (19) p. 77.
- Atelocystis*; op. cit. p. 51.
- Baculocystis*; op. cit. p. 46.
- Balanocystis*; op. cit. p. 77.
- Belemnocystis*; BATHER (19) p. 51.
- Calix*, incl. *Craterina* pars, redescr.; op. cit. p. 46, figg. v, vi.
- Callocystinae*, sub-fam. of *Glyptocystidae*; op. cit. p. 61.
- Callocystis*, incl. *Anthocystis*, redescr.; op. cit. p. 62, fig. xxxi.
- Cardiocystis*; BATHER (19) p. 77.
- Carpocystis*, referred to *Sphaeronidae*; op. cit. p. 73.
- Caryocrinidae*, diagnosis, and description of genera; op. cit. p. 65.
- Caryocrinus*; ZITTEL & EASTMAN (369), fig. 296 b: should be *Caryocystis*; BATHER in Review: redescr., incl. *Stribulocystis*, *Enneacystis*; BATHER (19) p. 67, fig. xxxvi. *C. ornatus*; WILLIAMS (352) p. 51.
- Caryocystis*, incl. *Amorphocystis*, redefined with genotype *C. angelini testudinarius* Auctt.; BATHER (19) p. 55, fig. xvii. *C. granata* WIMAN (356).
- Cheirocrinus*, redescr., *C. penniger* (fig. xxxii), *C. volborthi*; BATHER p. 63.
- Cigara*; op. cit. p. 48.
- Citrocystis*, vide *Echinospaera*.
- Codiacyctis*; BATHER (19) p. 73.
- Comarocystidae*, diagnosis, and description of genera; op. cit. p. 55.
- Comarocystis*, redescr.; loc. cit.
- Corylocrinus*, redescr.; op. cit. p. 67, fig. xxxvi.
- Craterina*, vide *Calix*. *C. bohemica* and *C. docens*; ZELIZKO (366) p. 1

- Crinocystis*, probably a Camerate Crinoid; BATHER (19) p. 77.
- Cryptocrinidae*, retained in *Aporita*, genera descr.; op. cit. p. 69.
- Cryptocrinus*, redescr.; loc. cit. and fig. xxxvii.
- Crystallocystis*, vide *Echinospaera*.
- Cyathocystidae*, diagnosis, and *Cyathocystis*, descr.; BATHER (19) p. 208, fig. v.
- Cyclocystoides*, referred to *Edrioasteroidea*, descr.; op. cit. p. 210, fig. viii. C. sp.; WINCHELL & ULRICH (357) p. cxxiii.
- Cystaster*, incl. *Thecocystis*, descr.; BATHER (19) p. 207, fig. ii.
- Cystoblastus*, redescr., referred to *Glyptocystinae*, relationship to *Blastoids* denied; op. cit. p. 64, fig. xxxv.
- Dendrocystidae*, diagnosis; BATHER (19) p. 47.
- Dendrocystis*, redescr.; loc. cit. and fig. ix.
- Deutocystis*, redescr.; op. cit. p. 46, fig. vii.
- Dictyocrinus*; op. cit. p. 77.
- Dinocystis*; BATHER (19) p. 209.
- Diploporida*, Order, diagnosis and classification; op. cit. p. 70 et seqq.
- Discocystis*; op. cit. p. 208.
- Echinoencrininae*, sub-fam. of *Glyptocystidae*; op. cit. p. 60.
- Echinoencrinus*, redescr., incl. *Gonocr.* and *Sycocystis*, and perhaps *Erinocystis*; BATHER (19) p. 60, figg. xxii, xxiii.
- Echinospaera*, incl. *Crystallocystis*, *Citrocystis*, *Trinemacystis*, redescr.; op. cit. p. 53, figg. xiv, xv. *E. baltica*; ALMERA (8) p. 733, and (9) p. 744; MALAISE (218) p. 806, and (219) p. 205. *E. munita*; op. cit. p. 200.
- Echinospaeridae*, diagnosis and description of genera; BATHER (19) p. 52 et seqq.
- Edrioaster*, descr.; op. cit. p. 209. *E. sp.*; WINCHELL & ULRICH (357) p. cxxiii. *E. biggsyi*, original drawings; BATHER (19) p. 209, fig. vi. *E. buchananus*, redescription of holotype, and portion of another specimen; BATHER (20).
- Edrioasteridae*, diagnosis, genera discussed; BATHER (19) p. 208.
- Enneacystis*, vide *Caryocrinus*.
- Enoploura*, maintained for *E. balanoides* and *E. crustacea*, the latter restricted; BATHER (19) p. 51.
- Eocystidae*, founded for *Eocystis longidactylus* and forms of similar structure; op. cit. p. 48.
- Eocystis* Billings, discussed (p. 48), *E. (?) longidactylus* (p. 49, fig. x); BATHER (19).
- Erinocystis*, vide *Echinoencrinus*.
- Eucystis*, redescr. perhaps incl. *Holocystites* spp. and *Trematocystis*; BATHER (19) p. 72, fig. xl.
- Eurycystis* sp.; WINCHELL & ULRICH (357) p. cxxiii.
- Fungocystis*, reconstruction; BATHER (19) p. 74, fig. xliv.
- Glyphyrocystis*; op. cit. p. 60.
- Glyptocystidae*, diagnosis, erection of sub-families *Echinoencrininae*, *Callo-cystinae*, *Glyptocystinae*, with description of genera; op. cit. p. 58.
- Glyptocystinae*, sub-fam. of *Glyptocystidae*; BATHER (19) p. 63.
- Glyptocystis*, redescr.; op. cit. p. 64, fig. xxxiii. *G. sp.*; WINCHELL & ULRICH, p. cxxiii.
- Glyptosphaera leuchtenbergi*, redescr.; BATHER (19) p. 73, fig. xlvi.
- Glyptosphaeridae*, diagnosis, and description of genera; loc. cit.
- Gomphocystidae*, diagnosis; op. cit. p. 76.
- Gomphocystis*, redescr.; op. cit. p. 77, fig. xlvi.
- Gonocrinus*, vide *Echinoencrinus*.
- Hallicystis*, vide *Lepadocrinus*.
- Haplocystis*, discussed; BATHER (19) p. 208.
- Heliocrinus*, incl. *Heliocystis*; op. cit. p. 55.

- Hemicosmites*, incl. *Hexalacystis*, redescr.; op. cit. p. 66, fig. xxxvi.
Hemicystis, discussed; BATHER (19) p. 207.
Heterocystis, redescr., referred to *Caryocrinidae*; op. cit. p. 67, fig. xxxvi.
Hexalacystis, vide *Hemicosmites*.
Holocystites gyrinus; BATHER (19) p. 72, fig. xlvi.
Holocystis, vide *Megacystis*.
Homocystis; BATHER (19) p. 64.
Juglancocrinus, redescr.; op. cit. p. 67, fig. xxxvi.
Lapillocystis; op. cit. p. 46. *L. fragilis*; ZELIZKO (365) pp. 321, 323.
Lepadocrinus, incl. *Apocystis*, *Staurocystis*, *Hallicystis*, and *Pseudoer. quadrifasciatus* and *P. oblongus*, redescr.; BATHER (19) p. 61, figg. xxix, xxx. *L.* sp. nondescr., Helderbergian, New York, and *L. gehardi*; SCHUCHERT (303) p. 280.
Lepadocystis, incl. *Meekocystis*, redescr.; BATHER (19) p. 61, fig. xxviii.
Lepidodiscus, descr.; op. cit. p. 208, fig. iv.
Lichenocrinus sp.; WINCHELL & ULRICH (357) p. cxxiii. *L. affinis*; SCHUCHERT (302) p. 155.
Lichenoides, incl. *Lichenocystis*, redescr.; BATHER (19) p. 56. *L. priscus*; ZELIZKO (365) pp. 322, 323.
Lodanella; BATHER (19) p. 46. *L. mira* Kayser (as Sponge), has 5 forked arms, as a Crinoid, but stereom structure resembles *Cyst.* e.g. *Craterina*; SCHLUETER (298).
Lysocystis, incl. *Echinocystis* Hall and *Scolocystis* Greg., redescr.; BATHER (19) p. 70.
Macrocytella, redescr., probably incl. *Mimocystis*; op. cit. p. 56, fig. xviii.
Macrocystellidae, diagnosis, and description of genera; loc. cit.
Malocystidae, diagnosis, and description of genera; BATHER (19) p. 57.
Malocystis; op. cit. p. 58.
Meekocystis, vide *Lepadocystis*.
Megacystis, discussed; BATHER (19) p. 47.
Mesocystidae, diagnosis; op. cit. p. 75.
Mesocystis, syn. *Mesites* Hoffm., redescr.; loc. cit. and fig. xlvi.
Mimocystis, vide *Macrocytella*.
Mitrocystis, redescr.; BATHER (19) p. 50, fig. xii. *M.* sp.; ZELIZKO (365) p. 323.
Neocystis; BATHER (19) p. 77.
Orocystis, redescr.; op. cit. p. 54, fig. xv.
Palaeocystis; loc. cit.
Palmacystis; BATHER (19) p. 73.
Pilocystis; op. cit. p. 46.
Pirocystis; op. cit. p. 47, fig. viii.
Placocystis, redescr.; op. cit. p. 51, fig. xiii.
Platycystis; BATHER (19) p. 51.
Pleurocystis, redescr.; op. cit. p. 64, fig. xxxiv. *P.* sp.; WINCHELL & ULRICH (357) p. cxxiii.
Pomocystis, rejected; BATHER (19) p. 72.
Pomonites, rejected; loc. cit.
Pomosphaera, rejected; BATHER (19) p. 72.
Porocrinus, vide sub IV, F.
Proteocystis, redescr.; BATHER (19) p. 73, fig. xli.
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Protocrinidae, diagnosis, and description of genera; BATHER (19) p. 74.
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Prunocystis, incl. *P. fletcheri* (fig. xxiv) and *Echinoencr. baccatus*, redescr.; BATHER (19) p. 60.
Pseudocrinus, redescr.; op. cit. p. 62, fig. xxix; vide etiam *Lepadocr.*
Rhombofera, Order, diagnosis, and classification; op. cit. p. 52.

Rhombofiera Barr., genus redescr., *R. mira* referred to *Stephanocer.*; op. cit. p. 57.

Schizocystis, redescr.; BATHER (19) p. 61, figg. xxv-xxvii.

Scoliocystis; op. cit. p. 60.

Sphaerocystis; op. cit. p. 63. *S. multifasciatus*; SCHUCHERT (303) p. 280.

Sphaeronidae, diagnosis, and description of genera; BATHER (19) p. 71.

Sphaeronia, redescr.; loc. cit. and figg. xxxviii, xxxix. *S. punctatus*; MALAISE (219) p. 200. *S. stelluliferus*; MALAISE (218) p. 806, and (219) pp. 196, 205.

Staurocystis, vide *Lepadocrinus*.

Staurosema, vide *Tiarocrinus*.

Steganoblastidae, fam. of *Edrioasteroidea*, diagnosis; BATHER (19) p. 209.

Steganoblastus, incl. *Astrocystites*, descr. and discussed, with original drawings of *S. ottawaensis*; loc. cit. and fig. vii.

Stichocystis; BATHER (19) p. 55.

Streptaster; op. cit. p. 208.

Stribolocystis, vide *Caryocrinus*. *S. elongatus*, n. sp., *Delthyris* Shaly Limest., Lower Helderberg group, Red Rock landing, Perry county, Mo.; *S. missouriensis*, n. sp., Niagara Limest., St. Genevieve county, Mo.; ROWLEY (289) p. 71, pl. ii.

Strobilocystis; BATHER (19) p. 63.

Stromatocystis, descr.; op. cit. p. 207, fig. i.

Sycocystis, vide *Echinoencrinus*.

Syringocrinus paradoxus; BATHER (19) p. 48.

Tiarocrinidae, diagnosis, and description of genera; op. cit. p. 57.

Tiarocrinus, incl. *Staurosema*, redescr.; loc. cit.

Trigonocystis, vide *Trochocystis*.

Trinemacystis, vide *Echinospheara*.

Trochocystis, incl. *Trigonocystis*, redescr.; BATHER (19) p. 50, fig. xi.

†H. BLASTOIDEA.

Blastoidea, diagnosis, division into Grades *Proto-* and *Eu-blastoidea*, with classification; BATHER (19) p. 78 et seqq.

Acentrotremites, redescr., referred to *Orbitremitidae*; op. cit. p. 90, fig. xii.

Asteroblastidae, diagnosis, and description of genera; op. cit. p. 80.

Asteroblastus, incl. *Astrocystis*, redescr.; loc. cit. and figg. i, ii.

Astrocrinus, vide *Zygocrinus*.

Blastoidocrinidae, diagnosis; BATHER (19) p. 80.

Blastoidocrinus, redescr. with reconstruction; loc. cit. and fig. iii.

Codaster, redescr.; op. cit. p. 82, figg. v, vi. *C. gracillimus*; ROWLEY (289) p. 66, pl. ii: horizon; ROWLEY (291) p. 249. *C. grandis*, test now first figured; ROWLEY (289) p. 66, pl. ii: horizon; ROWLEY (291) p. 250. *C. (Cryptoschisma?) laeviculus*, n. sp., base of Upper Burlington Limest., Louisiana, Mo.; ROWLEY (289) p. 65, pl. ii: ventral view; ROWLEY (290) pl. v, fig. 74: horizon, is not *Codaster*, but nearer to *Phaeoschisma* and [or] *Cryptoschisma*; ROWLEY (291) p. 250.

Codasteridae, diagnosis; BATHER (19) p. 91.

Codonites, vide *Orophocrinus*.

Codonoblastida, Series of *Eublastoidea*, incl. *Codasteridae* and *Pentremitidae*; BATHER (19) p. 91.

Cryptoblastus, redescr.; op. cit. p. 89. *C. melo*, horizons, variation, probably incl. *C. concinnulus* and *C. projectus*; ROWLEY (291) p. 245.

† All extinct.

- Cryptoschisma*, redescr.; BATHER (19) p. 84, fig. vii: vide etiam *Codaster laeviculus*.
- Dimorphocrinus*, vide *Orophocrinus*.
- Elaeocrinus*, vide *Nucleocrinus*.
- Eutherocrinidae*, diagnosis; BATHER (19) p. 92.
- Eutherocrinus*, redescr.; op. cit. p. 87, fig. ix.
- Eublastoidea*, higher grade of *Blastoidea*, diagnosis, and classification into Series *Codonoblastida*, *Troostoblastida*, and *Granatoblastida*; op. cit. pp. 81-93.
- Granatoblastida*, Series of *Eublastoidea*, incl. *Nucleocrinidae*, *Orbitremidae*, *Pentephylidae*, and *Zygocrinidae*; BATHER (19) p. 92.
- Granatoblastidae*, vide *Orbitremidae*.
- Granatocrinus*, vide *Orbitremites*.
- Heteroblastus*; BATHER (19) p. 90.
- Irregulares*, Order, rejected; op. cit. p. 91.
- Mesoblastus*, referred to *Orbitremidae*; op. cit. pp. 90, 92.
- Metablastus*, redescr.; op. cit. p. 87. *M. lineatus*, range; ROWLEY (291) p. 250.
- Nucleocrinidae*, diagnosis and restriction; BATHER (19) p. 92.
- Nudeocrinus*, incl. *Elaeacr.* and *Olivanites*, redescr.; op. cit. p. 88, figg. x, xi.
- Olivanites*, vide *Nucleocrinus*.
- Orbitremites*, incl. *Granatocr.*, redescr.; BATHER (19) p. 90, figg. xii, xv. *G.* [i.e. *O.*] sp., Timor; BOEHM (41) p. 555. *G.* [i.e. *O.*] sp. nondescr., Lower Burlington Limest.; ROWLEY (289) p. 74, pl. ii. *G.* [i.e. *O.*] *aplatus*, enlarged fig.; op. cit. p. 67, pl. ii: range, variations; ROWLEY (291) p. 248. *G.* [i.e. *O.*] *calycinus*, n. sp., base of Upper Burlington Limest., Louisiana, Mo.; ROWLEY (289) p. 66, pl. ii: horizon; ROWLEY (291) p. 249. *G.* [i.e. *O.*] *excavatus*; loc. cit. *G.* [i.e. *O.*] ?*magnibasis*, horizon; loc. cit. *G.* [i.e. *O.*] *mutabilis*, horizon, growth-stages (p. 250); *O. norwoodi*, horizons, variation, with var. *fimbriatus* (p. 247); *G.* [i.e. *O.*] *pyriformis* [sic] (p. 249); *G.* [i.e. *O.*] ?*pisum*, range, variation, perhaps incl. *G. exiguus* (p. 248); *G.* [i.e. *O.*] *roemerii*, range, incl. *G. sampsoni* (p. 250); ROWLEY (291) *G.* [i.e. *O.*] *spinuliferus*, n. sp., Warsaw? (St. Louis) Limest., Grand Tower, Ill., and Wittenberg, Mo.; ROWLEY (289) p. 69, pl. ii. *G.* [i.e. *O.*] *stella*, n. sp., base of Upper Burlington Limest., Louisiana, Mo., this with *G. magnibasis* may form a new genus; ROWLEY (289) p. 68, pl. ii, and (291) p. 249.
- Orbitremidae*, revision and diagnosis; BATHER (19) p. 92.
- Orophocrinus*, incl. *Dimorphocr.* and *Codonites*, redescr.; op. cit. p. 85, figg. iv, vii. *O. conicus*? in Lower Burlington; ROWLEY (291) p. 251. *C.* [i.e. *O.*] ?*inopinatus*, and an allied form, these with *Granatocr.* *aplatus* perhaps constitute a new genus; ROWLEY (289) p. 67, pl. ii: range; ROWLEY (291) p. 248. *O. stelliformis*, range, growth-stages; op. cit. p. 249. *C.* [i.e. *O.*] *whitii*?; ROWLEY (289) p. 68, pl. ii: horizon; ROWLEY (291) p. 249.
- Pentatrematites*, vide *Pentremites*.
- Pentephylidae*, diagnosis; BATHER (19) p. 93.
- Pentephylloides*, discussed; op. cit. p. 90.
- Pentremites*, redescr.; op. cit. p. 86, figg. vii, xv. *P.* sp.; DOUVILLE (94) p. 593. *Pentatrematites* [i.e. *Pentremites*] sp.; JAEKEL in FRECH (124) p. 204, fig. 45. *P. benedicti*, n. sp., Warsaw? (St. Louis) Limest., Grand Tower, Ill., and Wittenberg, Mo.; ROWLEY (289) p. 69, pl. ii. *P. burlingtonensis*, "probably a rotund *P. elongatus*"; ROWLEY (291) p. 248. *P. elongatus*, range, extra anal plate; op. cit. p. 247.
- Pentremitidae*, diagnosis and restriction; BATHER (19) p. 92.
- Pentremitidae*, redescr.; op. cit. p. 85.
- Phaenoschisma*, redescr.; op. cit. p. 84, fig. vii.

BLASTOIDEA, INCERTAE SEDIS. (IV, H, K.) *Echin.* 153

- Protoblastoidea*, the lower grade of *Blastoidea*, diagnosis, and classification into families *Asteroblastidae* and *Blastoidocrinidae*; op. cit. pp. 79-81.
Regulares, Order, rejected; BATHER (19) p. 91.
Schizoblastus, redescr.; op. cit. p. 89. *S.* sp. nondescr. (p. 249), *S. sayi*, horizons, variation, anal tube (p. 247); ROWLEY (291).
Tricelocrinus, redescr.; BATHER (19) p. 87, fig. xv.
Troostoblastida, Series of *Eublastoidea*, incl. *Troostocrinidae* and *Eleutherocrinidae*; op. cit. p. 92.
Troostoblastidae, vide *Troostocrinidae*.
Troostocrinidae, diagnosis; BATHER (19) p. 92.
Troostocrinus, redescr.; op. cit. p. 86, fig. viii. *T.?* *dubius*, n. sp., Delthyris Shaly Limest., Lower Helderberg group, Wittenberg, Mo.; ROWLEY (289) p. 70, pl. ii.
Zygocrinidae, diagnosis; BATHER (19) p. 93.
Zygocrinus, incl. *Astrocrinus*, redescr.; op. cit. p. 91, fig. xiv. *A.* [i.e. *Z.*] *benniei*; PEACH (260) p. 223.

K. INCERTAE SEDIS.

- †*Paropsonema cryptophya*, n. g. et sp., *Intumescens* zone, Portage Sandstone, Naples, N.Y. "probably an echinoid," but "the characters are so unusual and so different from structures presented by the fossil and recent *Echinodermata*" [that its Echinoderm nature is very doubtful]; CLARKE (68).



XV. VERMES.

BY

ARTHUR WILLEY, D.Sc.

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INTRODUCTION.

THE helminthological work for the year 1900 shows no signs of abatement.

Professor MCINTOSH's (198) monograph of the British Aphroditea, being the first part of his long expected monograph of British Polychæta, is probably the most notable systematic publication of the year. An epoch in the taxonomy of Oligochæta is without doubt inaugurated by MICHAELSEN's catalogue (209). Among other works dealing with the classification, anatomy and physiology of the Annelida we may note the researches of DARBOUX (92) on the Aphroditea, METALNIKOFF (203) on *Sipunculus*, GOODRICH (125) on the nephridia of *Polychaeta*, BEDDARD (19) on the genus *Amyntas* formerly *Perichaeta*, now itself doomed to give way to *Pheretima*, GAMBLE & ASHWORTH (118) on Arenicolidae, EHLERS (101), GRAVIER (128), FISCHLI (107) and VERRILL (319), on the Polychaeta of Magellan Strait, Red Sea, Ternate and the Bermudas respectively; ARSTEIN (6) on Pelagic Polychaeta, BLANCHARD (33), BRUMPT (58), CASTLE (68), MOORE (221) and SUKATSCHOFF (307), on the Hirudinea; F. SMITH (292), BOCK (37) and EISEN (103) on Oligochæta; HASWELL (140) on a new Histiobellid.

New genera of Nemertina reveal themselves to BERGENDAL (28), PUNNETT (251), THOMPSON (313). The habits and development of *Cerebratulus lacteus* are described as a contribution to physiological morphology by C. B. WILSON (337).

Turbellarians are described by SABUSOW (278), SHIPLEY (288), FUHRMANN (112), DÖRLER (95). Regeneration of Planarians is investigated among others by MORGAN (224), MONTI (218), LILLIE (169) and LEMON (167).

Entozoa as usual come in for a large share of attention from ARIOLA (8), COHN (79), BRAUN (43), FUHRMANN (110), LOOSS (181), LÜHE (182), LINSTOW (176), SHIPLEY (289), VOLZ (323), WOLFFHÜGEL (338), BENHAM (26), BENEDICT (24), RÁTZ (258), NASSONOW (227) and many others. The veteran helminthologist STOSSICH (305) has the customary annual monograph which is very hard to come by, while the habits of free-living Nematoda are the subject of another masterpiece by MAUPAS (196).

Rotifera, intimately associated with Plankton-researches, are described by ROUSSELET (276), J. C. SMITH (294), JENNINGS (160), listed by ZSCHOKKE (342) in a notable mémoire couronné, also by AMBERG (3), BURKHARDT (60), ZYKOFF (344), KOFOID (162) and illustrated by HAECKEL (137).

ROULE'S (275) work on the development of *Phoronis* records a host of data and touches on matters of controversy between him and MASTERMAN (192).

RITTER (265) describes Enteropneusta from Alaska, the principal feature being a species which he names *Harrimania maculosa* n. g. et sp.

It may be noted, however, that the character upon which he bases the new genus is not peculiar to this form which, in fact, is a *Balanoglossus* s. str. In the vicissitudes of nomenclature it nevertheless seems likely that *Harrimania* will triumph over *Balanoglossus*, not to mention *Balanoccephalus*.

Finally, it is interesting to note the discovery of a new species of *Balanoglossus* s. str. (*B. koehleri*) in the Channel at Cape de la Hague, by the indefatigable zoologists CAULLERY & MESNIL (70).

I. TITLES.*

1. ALLEN, E. J. & TODD, R. A. The Fauna of the Salcombe Estuary. J. Mar. Biol. Ass. (N. S.) vi, Vermes, pp. 188-199.
Polychæta by E. J. ALLEN.
2. AMBERG, O. Die von Schröter-Amberg modifizierte Sedgwick-Rafter-sche Methode der Planktonzählung. Biol. Centrbl. xx, pp. 283-288.
3. ——. Beiträge zur Biologie des Katzensees. Vierteljahrsschr. Ges. Zurich xlvi, pp. 59-136, Taf. ii-vi.
4. ANDREWS, C. W. A monograph of Christmas Island (Indian Ocean). London, 1900. [Earthworms by D. Rosa, q. v. (268).]
5. APÁTHY, V. Mikroskopische Präparate über postembryonale Vermehrung und Wachstum der Neurofibrillen. Anat. Anz. xviii, Ergänzungsheft, pp. 211-213.
6. APSTEIN, C. Die Alciopiden und Tomopteriden der Plankton-Expedition. Plankton Exped. Bd. 2, pp. 1-61, 7 pls. & 7 maps, & 4 text-figg.
7. ARIOLA, V. Eine Zweideutigkeit des Dr. Lühe. Zool. Anz. xxiii, pp. 417-419.
8. ——. Revisione della famiglia *Bothriocephalidae* s. str. Arch. parasit. iii, pp. 369-484, pls. 8-10.
9. ——. Nota sui Cestodi parassiti del *Centrolophus pomphilus* Linn. Atti Soc. Ligustica xi, pp. 215-220. Also Monit. Zool. Ital. Supp. xi, p. 14. Abstract.
- ASHWORTH, J. H. [See GAMBLE & ASHWORTH (118)].
10. ASKANAZY, M. Ueber Art und Zweck der Invasion der *Anguillula intestinalis* in die Darmwand. Centrbl. Bakter. xxvii, pp. 569-578, 1 Taf.
11. ——. Ueber Infektion des Menschen mit *Diatomum felinum (sibiricum)* in Ostpreussen und ihren Zusammenhang mit Leberkrebs. Op. cit. xxviii, pp. 491-502.
12. BACHMANN, HANS. Die Planktonfänge mittels der Pumpe. Biol. Centrbl. xx, pp. 386-400.
13. BATAILLON, E. La Resistance des œufs d'Ascaris et la pression osmotique. C.R. Soc. Biol. lii, pp. 435-437.
14. ——. La pression osmotique et l'anhydrobiose. T. c. pp. 437 & 438.
15. BEAUMONT, W. I. The Fauna and Flora of Valencia Harbour on the West Coast of Ireland. vii. The results of Dredging and Shore-collecting. P. Irish. Ac. (3) v, pp. 754-798, 1 chart.
[Vermes, pp. 770-773 & pp. 782-785.]
16. ——. The Fauna and Flora of Valencia Harbour on the West Coast of Ireland. xi. The Nemertea. T. c. pp. 815-831.
17. BEDDARD, F. E. On the Earthworms collected during the "Skeat Expedition" to the Malay Peninsula, 1899 & 1900. P. Zool. Soc. London 1900, pp. 891-911, 7 figg.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Paper or Work referred to.

18. [BEDDARD, F. E.] On a new species of Earthworm from India belonging to the genus *Amyntas*. T. c. pp. 998-1002, 3 figg.
19. —. A Revision of the Earthworms of the genus *Amyntas* (*Perichaeta*). T. c. pp. 609-652.
20. —. On the structure of a new species of Earthworm of the genus *Bonhamia*. T. c. pp. 653-659, 3 figg.
21. —. On a species of Earthworm from Western Tropical Africa, belonging to the genus *Bonhamia*. T. c. pp. 167-173, 3 figg.
22. —. The earthworms of the Hawaiian Archipelago. Fauna Hawaiiensis ii, Part iv, pp. 413-426.
23. BELL, F. JEFFREY. Remarks on a collection of Land-Planarians made by Dr Goeldi in Brasil. P. Zool. Soc. London 1900, pp. 266 & 267.
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- T. leptcephala* Creplin, parasite of mouse, rat, and man = *T. diminuta* Rud.; PREVITERA, Bull. Acc. Gioen., March 1900, Fasc. ixiii, p. 9.
- T. mychocephala*, p. 981, n. sp., from *Varanus* sp., New Guinea; RÄTZ, v., C.R. Soc. Biol. lii.
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- Trienophorinae*, subfamily of *Bothriocephalidae* (q. v.), containing those genera which possess marginal genital pores, p. 99; LÜHE, Zeitschr. wiss. Zool. lxviii.

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- Harmostomum* n. g. type *Distomum leptostomum* OLSS.; BRAUN, Zool. A. xxii 1899, p. 492, also Zool. Jahrb. Syst. xiv, 1900, pp. 5 & 12. T name, contained in a note, was overlooked last year; it takes priority of *Heterolope* LOOSS.
- Heterolope* LOOSS gives way to *Harmostomum* BRAUN q. v.; BRAUN, Z. Jahrb. Syst. xiv, p. 13.
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- M. trigonocephalum* RUD., detailed description; SHIPLEY, Zool. Res. (WILLEY), Part v, pp. 532-540.
- Opisthogonimus*, n. g., *lechithonotus*, n. sp., p. 555 = *O. dryadum* (West), p. 743; LÜHE, Centrbl. Bakter. xxviii.
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NEMATHELMINTHES.

NEMATODA.

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Dermatology. *Filaria*; DUBREUILH, Centrbl. Bakter. xxviii, p. 456.

Development of *Ascaris decipiens* Krabbe; the larvæ occur in closely packed masses with the head end imbedded in the gastric mucosa of *Trichechus rosmarus* and *Phoca barbata*, where they undergo several ecdyses and then become free and pass into the intestine of the same host where they become sexually mature. In like manner the larva of *Nematoxys longicauda* Linst. grows in the lung of *Triton tauriatus*, *alpestris* and *cristatus*, finally migrating into the intestine of the same host where it becomes mature, pp. 119-124; LINSTOW, Fauna Arctica. *Sclerostomum equinum* Duj., p. 846; CONTE, C.R. Ac. Sci. cxxxi.

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- Histology.* Phagocytic Organ (Zellkörper) in *Ascaris decipiens*, p. 1 LINSTOW, Fauna Arctica.
- Parturition. Oviparity, Ooviviparity, Viviparity and Embryonic parasitism in free-living Nematodes, dependent upon nutrition, p. 375; COS C.R. Soc. Biol. lii.
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- Phytopathology. *Heterodera radicicola* in roots of garden *Clema* CHIFFLOT, Bull. Soc. Saone, 26th Ann. p. 128, also referred to by VUIL MIN, Bull. Soc. Nancy séances (sér. 3) i.
- Preciology. Effect of nutrient matrix on the development of *Rhabdomyphystera Btsli*, p. 374; CONTE, C.R. Soc. Biol. lii.
- Sexuality. Free-living Nematoda; MAUPAS, Arch. Zool. exp. (3) p. 463.
- Statistics. Horses, asses and mules infected with *Spiroptera reticulata* (Dies.); PADER, Bull. Soc. Nîmes xxvii, p. 59.
- Traumatism. Attachment of *Uncinaria radiata* to intestinal wall of the ox; RIZZO, Rend. Acc. Lincei (5) ix, sem. 2, p. 107.
- Treatment. Gape-worm (*Syngamus trachealis*), p. 755. Thymol best nematocide for *Heterakis*; THEOBALD, Centrbl. Bakter. xxvii.
- Undetermined Nematode from perivisceral cavity of *Echinus esculentus* from Plymouth, p. 288; SHIPLEY, Quart. J. Micr. Sci. xliv.

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- Arctic. List of Arctic and subarctic parasitic and free-living Nematodes, pp. 129-131; LINSTOW, Fauna Arctica.
- Antarctic. List of subantarctic parasitic and free-living Nematodes, pp. 131 & 132; LINSTOW, t. c.
- Switzerland. Nematode Fauna of mountain lakes; ZSCHOKKE, De Schweiz. Ges. p. 87.
- Hungary. Nematoden, p. 186; RÁTZ, Termes. Fuzetek xxiii.
- Algeria. Free-living Nematoda; MAUPAS, Arch. Zool. exp. (3) p. 463.
- Egypt. Nematoda of Equidae; LOOSS, Centrbl. Bakter. xxvii, pp. 184 & 184.
- N. America. Gordiacea, p. 95; MONTGOMERY, T. H., Jr., Biol. Bull. Sclerostomina of Ruminants, p. 102; RAILLIET, Arch. parasit. iii.
- Uncinariasis. Species of *U.* in Canidae and Felidae, p. 82; RAILLIET, Arch. parasit. iii.

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- Filaria* of the human eye, synonymy; SUPINO, Rend. Acc. Lincei (5) ix–1, p. 85.
- F. bancrofti* Cobbold, p. 76, *magalhæsi* Manson, p. 79, and other species of blood *Filariae*; v. LINSTOW, Zool. Anz. xxiii, p. 76.
- F. haemorrhagica* is subcutaneous tissue of horse, p. 517; RÁTZ, Centrbl. Bakter. xxviii.
- Gnathostoma shipleyi* Stossich, p. 560; SHIPLEY, Zool. Results (Willey), Pt. v.
- G. hispidum* Fedtsch., p. 184; RÁTZ, Termes. Fuzetek xxiii.
- Gyalocephalus* n. g. *capitatus*, n. sp., p. 191; LOOSS, Centrbl. Bakter. xvii.
- Heterakis distans* Rud., p. 5; LINSTOW, Arch. Naturg. lxvii.
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- Macrolaimus crucis*, n. sp., p. 578; MAUPAS, Arch. Zool. exp. (3) viii.
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- Sclerostomum equinum* (Müller) (= *Strongylus armatus* R. = *S. neglectus* Poeppl.), p. 154, *edentatum*, n. sp., p. 155, *vulgare*, n. sp. (= *Strongylus armatus* Rud. sensu Poeppl.), p. 155; LOOSS, Centrbl. Bakter. xxvii.
- S. epistomum*, n. sp., p. 515. Intestine of Elephant; PIANA e STAZZI, Arch. parasit. iii.
- S. appendiculatum* Molin, p. 560; SHIPLEY, Zool. Results (Willey), Pt. v.
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- Spiroptera corvi*, n. sp., p. 362, *obtusa* Rud., from stomach of *Mus musculus*, *sylvaticus* and *decumanus*, the larva occurs encapsulated in *Tenebrio molitor*, p. 363; LINSTOW, Arch. mikr. Anat. vi.
- S. reticulata* (Dies.) Railliet, description; PADER, Bull. Soc. Nîmes xxvii, p. 59.
- S. reticulata* Dies. in peritoneum of horse, also in the *ligamentum nucha*, etc., p. 517; RÁTZ, Centrbl. Bakter. xxviii.
- Thoracostoma denticaudatum* Schn., p. 126, Taf. vii, figg. 36 & 37. Spitzbergen under dead marine animals; LINSTOW, Fauna Arctica.
- Trichosoma brevicole* Rud., small intestine of goose, *candidatum* Molin, small intestine of domestic fowl, *reticulatum* Railliet, coeca of fowl *longispiculum* Sonsino, intestine of *Python molurus* Gr.: II Bull. Ac. Cracovie 1900, p. 183.

Triodontus n. g. type *Sclerostomum robustum* Giles, pp. 153 & 190, p. 190, *serratus*, p. 191, n. spp.; Looss, Centrbl. Bakter. xxvii. *Uncinaria os-papillatum*, n. sp., p. 512. Intestine of Elephant; PI STAZZI, Arch. parasit. iii.

ACANTHOCEPHALA.

SYSTEMATIC.

Apororhynchidae new family with single genus and species *A. hemisphaericus* SHIPLEY, p. 440; SHIPLEY, Fauna Hawaiianensis ii, Part iv. *Echinorhynchus aurantiacus* Risso, 1826 = *E. pellucidus* F. S. LEWIS, 1828 = *E. annulatus* Molin, 1858; MONTICELLI, Monit. Zool. i supp., p. 36.

CHÆTOGNATHA.

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Antarctic. Of the 31 known species of Chaetognatha 6 occur in Antarctic Region. *Sagitta hexaptera*, *S. bipunctata* and *S. serrata* are cosmopolitan, *Krohnia hamata* is bipolar; STEINHAUS, H. Mag. v-2, p. 9.

Valencia Harbour. Chaetognatha, p. 745. Description of *Sagitta ciliata* Steinhaus (1896), p. 746; GAMBLE, P. Irish Ac. (3) v.

ROTIFERA.

GENERAL BIOLOGY.

Anatomy. Detailed description of external morphology, adhesive skin and tissues, alimentary, nervous and excretory systems of *Apsilus vorax* (Leidy); GAST, Zeitschr. wiss. Zool. lxvii.

Bionomics. *Apsilus vorax* (Leidy); GAST, t. c. p. 168.

Habits and Distribution of species of *Lacinularia*; ROUSSEAU, Quekett Club (2) vii, p. 313.

Iconography. HAECKEL, Kunst-Formen der Natur.

Planktometry. BUCHET, Rev. Scient. Sér. 4, xiv, p. 5; BURCK Mt. Ges. Luzern iii, p. 130; WARD, Tr. Amer. Micr. Soc. xxi, p. 227 Plankton. STEUER, Biol. Centrbl. xx, p. 25; FUHRMANN, t. c. p. 120; AMBERG, t. c. p. 283; BACHMANN, t. c. p. 386; BURCKHARDT p. 426; WESENBERG-LUND, t. c. pp. 606 & 644; WHIPPLE, Tr. Micr. Soc. xxi. Elbe near Podiebrad, Bohemia. (No details), FRIČ & VAVRA, Zool. Anz. xxiii. Echo River, Mammoth Cave, Kentucky recently derived from epigean waters and presenting few if any stygian forms; KOFOID, Tr. Amer. Micr. Soc. xxi, p. 113. ZYKOFIČ Anz. xxiii, p. 625; BURCKHARDT, Rev. Suisse Zool. vii, p. 412: A Vierteljahrsschr. Ges. Zurich xlvi, p. 59: ZSCHOKKE, Denk. Schweiz 1900, p. 92.

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DISTRIBUTION.

Odessa. Enumeration of 5 species of Rotatoria in the Chadjibej Liman, p. 496; BUTSCHINSKY, Zool. Anz. xxiii.

United States. Rotatoria, p. 67; JENNINGS, Bull. U. S. Fish Comm. 1900.

SYSTEMATIC.

Mastigocerca hamata var. *bologoënsis* n. var., *birostris*, n. sp., Lake Bologoë, pp. 622 & 623; MINKIEWICZ, Zool. Anz. xxiii.

Notogonia ehrenbergii Perty; SMITH, Tr. Amer. Micr. Soc. xxi, p. 95.

Notops pelagicus, n. sp., p. 82; JENNINGS, Bull. U. S. Fish Comm. 1900.

Pleurotrocha parasitica, n. sp., p. 84; JENNINGS, t. c.

GASTROTRICHA.

DISTRIBUTION.

Switzerland. *Cheatonotinae* of the mountain lakes; ZSCHOKKE, Denk. Schweiz. Ges. p. 109.

HEMICHORDA.

GENERAL BIOLOGY.

Actinotrocha. Metamorphosis; ROULE, C.R. Soc. Biol. lii, pp. 439 & 441. The two Mediterranean species of *Phoronis* have as larval form *Actinotrocha metchnikowi*; the Atlantic *Phoronis hippocrepis* (closely allied to *P. kowalevskyi* of Mediterranean) has *Actinotrocha müllerii* as larva. The larval differences are independent of the specific distinctions, p. 217; ROULE, Ann. Sci. Nat. sér. 8, xi.

Affinities of *Phoronis*, p. 927; ROULE, C.R. Ac. Sci. cxxx.

Anatomy and development of *Phoronis buskii*; MASTERMAN, Quart. J. Micr. Sci. xlili, p. 375.

Ciliated epidermis of *Balanoglossus*; STUDNIČKA, SB. Bohmisch. Ges. 1899, No. xxxv.

Development of *Phoronis*, p. 51; ROULE, Ann. Sci. Nat. sér. 8, xi. Mesoderm of *Phoronis*; MASTERMAN, Quart. J. Micr. Sci. xlili, p. 375: ROULE, Zool. Anz. xxiii, p. 425.

Enteropneusta. METCALF, Amer. Natural. xxxiv, p. 123.

Parasitology. Aplosporidia in body-cavity of *Ptychoderma minuta*, p. 259; CAULLERY et MESNIL, C.R. Soc. Biol. lii.

Stomochord of *Harrimania*; RITTER, P. Washington Ac. ii, p. 111.

DISTRIBUTION.

Actinotrocha at Cullercoats; BRADY, Nat. Hist. Tr. Northumb. xiii, p. 442.

English Channel. Discovery of a new species of *Balanoglossus* n. str.; CAULLERY et MESNIL, C.R. Soc. Biol. lii, p. 256.

Alaska. *Harrimania maculosa*; RITTER, P. Washington Ac. ii, p. 111.

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New Zealand. *Balanoglossus*; BRADY, N. Land Inst. xxxii.

SYSTEMATIC.

Actinotrocha-larva of *Phoronis hippocrepia* Wright, in Valencia Harbour, p. 690; BROWNE, P. Irish Ac. (3) v.

Balanoccephalus nov. mut. for *Balanoglossus* s. str.; HARMER, P. Cambridge Soc. x, p. 190.

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Rhabdopleura recorded from Lat. 61° 41' Long. 3° 19'E., 402 metres, temperature 6°C., p. 24; NORDGAARD on Polysoa of Norwegian N. Atlantic Exped. 1876-1878, Christiania, 1900.

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XVI. CŒLENTERATA.*

By

ARTHUR WILLEY, D.Sc.

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 North Pacific. *Haliclystus stejnegeri*, n. sp. from Bering Island
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 P. U. S. Mus. xxii, p. 125.

SYSTEMATIC.

- Atolla chuni, valdiviae*, n. spp., p. 277; VANHÖFFEN, Zool. Anz. xxiii.
Aurelia habanensis, n. sp., p. 69; MAYER, Bull. Mus. Harvard xxxvii.
Bathyluca, n. g. *solaris*, n. sp., p. 2; MAYER, t. c.
Charybdea aurifera, n. sp., p. 70; MAYER, t. c.
Haliclystus auricula (Rathke), p. 806; BEAUMONT, P. Irish Ac. (3) v.
H. stejnegeri, n. sp., p. 126, Bering Island; KISHINOUYE, P. U. S. Mu
 xxii.
Lucernaria, unnamed, n. sp., p. 811; BEAUMONT, P. Irish Ac. (3) v.
Periphyllopsis, n. g., p. 278, VANHÖFFEN, Zool. Anz. xxiii.
 †*Rhizostomites*. Fossil Medusæ, p. 51; MASSAT, Naturaliste xxii.

ANTHOZOA.

GENERAL BIOLOGY and DISTRIBUTION.

Classification of Class Anthozoa.

Sub-Class I. *Alcyonaria.*

- Grade A. *Protalcyonacea.*
 Grade B. *Synalcyonacea* n.
 Order 1. *Stolonifera.*
 " 2. *Alcyonacea.*
 " 3. *Pseudaxonia.*
 " 4. *Axifera.*
 " 5. *Stelechotoka* n.
 " 6. *Cænothecalia* n.

Sub-Class II. *Zoantharia.*

- Grade A. *Paramera* n.
 Order 1. *Cerianthidea.*
 " 2. *Antipathidea.*
 " 3. *Zoanthidea.*
 " 4. *Edwardsiidea.*
 " 5. *Proactinia.*
 Grade B. *Cryptoparamera* n.
 Order 6. *Actiniidea.*
 Sub-order 1. *Malacactinia* n.
 " 2. *Scleractinia* n. (= Madreporaria); BOURNE (16).

Corsica. Anthozoa; ROULE, Bull. Soc. zool. France xxv, p. 126.

ALCYONARIA.

GENERAL BIOLOGY.

Anatomy: *Tubipora*, *Clavularia*, *Telesio*; HICKSON & HILES, Zool. Res. (Willey) iv: *Xeniidae*; ASHWORTH, t. c.

Ancestry of *Heliopora*; GREGORY, P. R. Soc. London lxvi, pp. 19 and 291.

Gonads. In *Tubipora musica* ♂, young sperm sacs in their follicles were found on the 6 ventral mesenteries only as described by VON KOCH; in *Clavularia viridis* ♀ the ovisacs were attached to all 6 of the ventral mesenteries below the ventral mesenterial filaments; hermaphroditism of very rare occurrence in Alcyonarians; HICKSON & HILES, Zool. Res. (Willey) iv.

Xeniidae, ovisacs and sperm sacs on the edges of the ventral and lateral mesenteries of the larger polyps; *Xenia viridis* a protandric hermaphrodite, p. 517; ASHWORTH, t. c.

Growth of *Pleurocorallium* at Madeira; JOHNSON, P. Zool. Soc. London 1899, pp. 978 & 979.

Monograph: Alcyonaria of the Golfe du Lion; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii, p. 353.

DISTRIBUTION.

Arctic: Arctic and subarctic Alcyonacea comprising 9 species of Clavulariidae (6 of *Clavularia* and 3 of *Sympodium*), 1 *Organidus*, 5 Alcyoniidae, 34 Nephthyidae all placed in the genus *Paraspongodes* of which 3 new; there are no circumpolar species; bathymetrical distribution, p. 406; MAY, Fauna Arctica.

Antarctic: Subantarctic Alcyonacea, comprising 9 species, 2 Clavulariidae and 7 Alcyoniidae; MAY, t. c.

Mediterranean: Alcyonaria of the Golfe du Lion; LACAZE-DUTHIERS, Arch. Zool. exp. (3) viii, p. 353.

Bermudas: Alcyonaria, p. 568; VERRILL, Tr. Connect. Ac. x.

Oriental Region: Alcyonacea of the China Sea and Japan; PÜTTER, Zool. Jahrb. Syst. xiii.

New Britain etc.: Alcyonacea; HICKSON & HILES, Zool. Res. (Willey) iv: *Xeniidae*; ASHWORTH, t. c.

New Guinea: Stolonifera; HICKSON & HILES, t. c.

S. Africa: Alcyonaria of Cape; HICKSON, Marine Invest. S. Africa, No. 5.

Alcyonium at Cullercoats; BRADY, Nat. Hist. Tr. Northumb. xiii, p. 442.

SYSTEMATIC.

Acrophytum, n. g. *claviger*, n. sp., p. 74; HICKSON, Marine Invest. S. Africa, No. 5.

Alcyonium glomeratum Hassall, New Britain, p. 503, previously recorded from coasts of Great Britain and Norway; *macropodium*, n. sp., New Britain, pl. 50, figg. 8-10, p. 504; HICKSON & HILES, Zool. Res. (Willey) iv.

Ammothea, said to be a spurious genus to be merged with *Nephthea*: the name moreover preoccupied by a Pycnogonid, p. 41 HILES, t. c.

- A. rubriflora*, China Sea, p. 451, n. sp.; PÜTTER, Zool. Jahrb. Syst. :
Bellonella rigida, Japan, p. 448, n. sp.; PÜTTER, t. c.
Cavernularia elegans (Herklotz), p. 89; HICKSON, Marine Invest. S. No. 5.
Clavularia viridis Q. and G. from D'Entrecasteaux Group (British Guineas), p. 494, pl. 51, figg. 13 & 14; HICKSON & HILES, Zoo (Willey) iv.
Eleutherobia, n. g. *japonica*, Japan, p. 449, n. sp.; PÜTTER, Zool. Syst. xiii.
Eunicea grandis, n. sp., p. 570; VERRILL, Tr. Connect. Ac. x.
Fascicularia Viguier, p. 452; LACAZE-DUTHIERS, Arch. Zool. exp. (3) *Gorgia capensis*, n. sp., p. 83; HICKSON, Marine Invest. S. Africa, *Haimeia* M. E., genus of doubtful autonomy, p. 454; LACAZE-DUT. Arch. Zool. exp. (3) viii.
†*Heliopora somaliensis*, n. sp. from the Cretaceous of Somaliland, p. GREGORY, P. R. Soc. London lxvi.
Heteroxenia capensis, p. 70, n. sp.; HICKSON, Marine Invest. S. A. No. 5.
Juncella elongata (Pall.), p. 85; HICKSON, t. c.
Lobularia Sav. a spurious genus as maintained by KLUNZINGER, p. HICKSON & HILES, Zool. Res. (Willey) iv.
Melitodes dichotoma (Pall.) p. 80; HICKSON, Marine Invest. S. A. No. 5.
Nephthya virescens (Sav.) = *Ammothaea virescens* Sav. Description, p. HICKSON & HILES, Zool. Res. (Willey) iv.
†*Octotremacis*, n. g., type *Polysolenia hochstetteri* v. Reuss from Miocene Java, p. 302; GREGORY, P. R. Soc. London lxvi.
Organidus, spurious genus; *O. nordenskjöldi* Daniellsen = *Bellonella* a (Dan.) sp. juv. The family *Organinæ* also falls; PÜTTER, Zool. J. Syst. xiii, pp. 444 & 446.
Paracyonium M. E. Note, p. 451; LACAZE-DUTHIERS, Arch. Zool. (3) viii.
Paraspongoides caduca, p. 394, *uviformis*, p. 395, *globosa*, p. 400, n. MAY, Fauna Arctica.
†*Polytremacis septifera*, n. sp., a Helioporid from the Turonian of G. p. 301; GREGORY, P. R. Soc. London lxvi.
Rolandia coralloïdes, n. sp., Gulf of Lyons, p. 424, LACAZE-DUT. Arch. Zool. exp. (3) viii.
Sarcophytum trochiforme, n. sp., p. 77; HICKSON, Marine Invest. S. A. No. 5.
Spongioderma verrucosum Möb., p. 78, HICKSON, t. c.
Spongodes micronota, p. 454, *sinenensis*, p. 455, *vandula*, p. 456, *foliata*, p. 458, *microscopiculata*, p. 459, China Sea, n. spp.; PÜTTER, Jahrb. Syst. xiii.
S. semperi Studer, Lifu, 30 fins., pl. 50, figg. 5-7, p. 499; *rakaiye*, New Britain, 3-4 fins., pl. 51, fig. 11, p. 499; HICKSON & HILES, Zool. Res. (Willey) iv.
Sympodium coralloïdes, p. 369; LACAZE-DUTHIERS, Arch. Zool. exp. viii.
Telesto rupicola Müller, 50 fins., pl. 50, figg. 1 & 2; *arthuri*, n. sp., 30 fins., pl. 50, figg. 3 & 4, and pl. 51, fig. 12, New Britain; HICKSON & HILES, Zool. Res. (Willey) iv.
Tubipora musica L. a multifacial species like *Millepora alcicornis*; HICKSON & HILES, t. c.
Xenia crassa Scheuk, New Caledonia, p. 510; *membranacea* Schenk, Britain, p. 512; *umbellata* Sav., New Britain, p. 513; *viridis* Schenck, New Caledonia; *nove britanniae*, n. sp., p. 518; tabular synopsis of species of *Xenia*, p. 524; ASHWORTH, t. c.

ANTIPATHARIA.

DISTRIBUTION.

Madeira: Antipatharian faunule comprising 8 species; JOHNSON, P Zool. Soc. London 1899, p. 813.

SYSTEMATIC.

Antipathella gracilis (Gray), p. 819, *brookii*, n. sp., p. 821; JOHNSON, P. Zool. Soc. London 1899.

Antipathes furcata Gray, p. 819, JOHNSON, t. c.

Aphanopathes wollastoni Brook, p. 821, var. *pilosus*, n. var., p. 822, JOHNSON, t. c.

Leiopathes glaberrima (Esper) M.-Edw., p. 817, *expansa*, n. sp., p. 817; JOHNSON, t. c.

Savaglia (= *Gerardia*) *lamurcki* (Hainé), p. 814; JOHNSON, t. c.

Stichopathes gracilis (Gray) p. 815, *setacea* (Gray) p. 816; JOHNSON, t. c.

ACTINIARIA.

GENERAL BIOLOGY.

Anatomy and histology of Jamaican Actiniaria; DÜRDEN, Tr. Dublin Soc. (n. s.) vii, p. 133.

Development of *Urticina* (*Tealia*) *crassicornis* (O. F. M.) and *Actinia equina* L., p. 1; APPELLÖF, Bergens Mus. Aarbog 1900, No. 1.

Environment: Localities for Actiniarians—East Africa, p. 133; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

Histology: Urticating cells of *Anemonia sulcata*; PRENANT, Arch. Anat. micr. iii, pp. 101-121, pl. v.

Phylogeny: Phylogenetic Classification of the Actiniaria into 2 Tribes *Protanthea* and *Synanthea* based upon the substitution for a peripheral ectodermal retractor apparatus of a more central mesenterial retractor apparatus. The Scyphistoma has nothing to do with the primitive Anthozoan proinorph; CARLGREN, 2 Beiheft Hamburg Anst. xvii, pp. 29-33.

Physiochemistry: Traces of copper in *Anthea cereus* etc.; DUBOIS, Ann. Soc. Linn. Lyon 1900, pp. 93-97.

Teratology: Monstrous specimens of *Actinolobus dianthus*; DE KERVILLE, Bull. Soc. Rouen 1899 (1900), p. 245.

DISTRIBUTION.

Bermudas: *Actiniaria*, p. 554; VERRILL, Tr. Connect. Ac. x.

Jamaica: *Actiniaria*, p. 133; DÜRDEN, Tr. Dublin Soc. (n. s.) vii.

North America: Synopsis of *Actiniaria*, p. 747; PARKER, Amer. Natural. xxxiv.

Ethiopian Province: Description of 42 species of East African Anthozoa including 1 Cerianthid, 32 Actinians and 9 Zoanthids; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

SYSTEMATIC.

- Actinia mesembryanthemum* H. & Ehr.=*Paractis hemprichi* (K
Isactinia hemprichi (Klunz.) CARLGREN, 2 Beiheft H
 Anst. xvii, p. 53.
Actinodendron hirsingorum, n. sp., p. 118, Taf. ii, fig. 12, Z
 CARLGREN, t. c.
Actinoidea sultana, p. 63, Taf. i, figg. 12 & 13; *africana*, p. 64, Z
 n. spp.; CARLGREN, t. c.
Actinoporus elongatus, n. sp., p. 283; CARLGREN, Ofv. Ak. Forh. 57
Actinotryx sancti-thomæ (Duch. et Mich.), p. 555, pl. 68, fig. 5; V
 Tr. Connect. Ac. x.
Alicia sansibarensis, n. sp., p. 48, Taf. i, figg. 6 & 7, Zanzibar,
 sandy ground; CARLGREN, 2 Beiheft Hamburg Anst. xvii.
Anemonia manjano, n. sp., p. 61, Taf. i, figg. 14 & 15, Zanzibar;
 GREN, t. c.
Anthoepsis koseirensis (Klunz.) Simon, p. 105 Taf. ii, figg. 17
 Zanzibar; CARLGREN, t. c.
Aurelianaria regalis Andres, description, p. 280; CARLGREN, Ofv. AI
 57.
Boloceroides memurrichi (Kwietn.), p. 36, Taf. i, figg. 10 & 11 and
 figg. 15 & 16; *hermaphroditica*, n. sp., differing from type in
 hermaphrodite, p. 38, both from Zanzibar; CARLGREN, 2
 Hamburg Anst. xvii.
Bunodeopsis globulifera, n. sp., p. 559; VERRILL, Tr. Connect. Ac. x
Bunodes waridi, n. sp., p. 66, Taf. i, fig. 17, Zanzibar; CARLGREN, 2
 Hamburg Anst. xvii.
Calliactis polypus (Forsk.) Klunz., p. 75, Taf. i, figg. 3 & 4, Z
 CARLGREN, t. c.
Corynactis globulifera (Ehr.), p. 40, text-fig. 1, Zanzibar; CARLGREN
Discosoma yuma, p. 83, Taf. ii, figg. 14 & 15; *unguja*, p. 84, Taf. ii,
 9, Zanzibar, n. spp.; CARLGREN, t. c.
Edwardsia, differentiated from *Gonactinia*; CARLGREN, t. c. p. 34.
Edwardsiella pudica (Klunz.), p. 46, Taf. i, fig. 5, Zanzibar; CAR
 t. c.
Gyrostoma tristis, p. 56, Taf. i, figg. 1 & 2; *dubia*, p. 58; *stuhlmanni*
 Taf. i, fig. 16, Zanzibar, n. spp.; CARLGREN, t. c.
Helianthopsis mabruki, n. sp., p. 102, Taf. ii, fig. 21, Taf. iv, figg.
 Zanzibar; CARLGREN, t. c.
Heteranthida, nov. fam., p. 92; CARLGREN, t. c.
Heterodactyla hemprichii Ehr., p. 114, Taf. iv, figg. 7-10, Zanzibar;
 GREN, t. c.
Heterodactylinae, n. s.-o., p. 138; DUERDEN, Tr. Dublin Soc. (n. s.) v
Homodactylinae, n. s.-o., p. 154; DUERDEN, t. c.
Homostichanthidae, nov. fam., p. 138; CARLGREN, 2 Beiheft Ha
 Anst. xvii.
Homostichanthus, n. g., p. 166, type *H. anemone* (Ellis); DUL
 Tr. Dublin Soc. (n. s.) vii.
Homostichanthus duerdensi, n. n. for *H. anemone*, p. 137; CAR
 2 Beiheft Hamburg Anst. xvii.
Isactinia, n. g. *badia*, n. sp., East Africa, p. 53; CARLGREN, t. c.
Isoedwardsia, n. g. differentiated from *Edwardsiella* but no co
 diagnosis nor type species, p. 46; CARLGREN, t. c.
Isophellia, n. g. *sabulosa*, n. sp., p. 72, taf. i, figg. 8 & 9, Zar
 CARLGREN, t. c.
Paradiscosoma, n. n. for *Isaura*, type *P. neglecta* (Duch. & Mich.),
 CARLGREN, t. c.

Pentactinia, n. g. *californica*, n. sp., p. 1166; CARLGREN, Ofv. Ak. Forh. 57.

Phellia rufa, n. sp., p. 557; VERRILL, Tr. Connect. Ac. x.

P. decora (H. & Ehr.), Klunz., p. 70, Taf. iii, figg. 5 & 6, Zanzibar; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

Phymanthus sansibaricus, p. 87, Taf. ii, figg. 13, 19, 20, Taf. iv, fig. 18; *strandesi*, p. 88, Taf. ii, figg. 4 & 5, Zanzibar, n. spp.; *loligo* (Ehr.) M.-E. & H., p. 90, Taf. ii, figg. 2 & 3, Taf. iv, fig. 17, Zanzibar; CARLGREN, t. c.

Stichodactylina, Sub-tribus of *Actiniaria-Nynanthea*, comprising 7 families of which 2, *Heteranthidae* and *Stoichactidae* are new, p. 77; CARLGREN, t. c.

Stoichactidae, nov. fam., p. 92; CARLGREN, t. c.

Stoichactis tapetum (Ehr.) Carlg., p. 94, Taf. ii, figg. 10 & 11; *giganteum* (Forsk.) Carlg., p. 97, Zanzibar, CARLGREN, t. c.

Thalassianthus aster Leuck., p. 107, Taf. ii, fig. 16, Taf. iv, figg. 1-6; *kraepelini*, n. sp., p. 111, Taf. ii, fig. 1, Taf. iv, figg. 11-13, Zanzibar; CARLGREN, t. c.

CERIANTHARIA.

SYSTEMATIC.

Cerianthus maiua, n. sp., Zanzibar; CARLGREN, 2 Beiheft Hamburg Anst. xvii, p. 27, Taf. iii, fig. 3.

ZOANTHARIA.

GENERAL BIOLOGY.

Commensalism of *Palythoa* and *Epizoanthus* with Pagurines, p. 279; ROULE, C.R. Ac. Sci. cxxxi.

Mesenterial filaments in *Zoanthus sociatus* (Ellis); McMURRICH, Tr. Canad. Inst. vi, p. 387.

DISTRIBUTION.

Bermudas: *Zoanthidae*, p. 560; VERRILL, Tr. Connect. Ac. x.
East Africa; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

SYSTEMATIC.

Epizoanthus, genus rejiciendum, p. 279; ROULE, C.R. Ac. Sci. cxxxi.

Gemmaria tubulifera, p. 126, Taf. v, fig. 2, vi, fig. 33, Tumbatu; *multisulcata*, p. 127, Taf. iii, fig. 1, v, fig. 3, vi, figg. 1 & 5, Zanzibar; *aspera*, p. 129, Taf. v, fig. 1, vi, fig. 2, Bauï, n. spp.; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

Iaurus spongiosus (Andr.) Haddon, p. 124, Taf. v, fig. 6, Bauï; CARLGREN, t. c.

Palythoa tropica, p. 130, *sansibarica*, p. 131, *incerta*, p. 133, all figured, East Africa, n. spp.; CARLGREN, t. c.

P. grandiflora, n. sp., p. 584; VERRILL, Tr. Connect.

P. paguricola, n. sp., coast of Corsica 50-120' C.R. Ac. Sci. cxxxi, also Bull. Soc. zool. F

- Parazoanthus tunicans*, p. 193; *separatus*, p. 197; *monostichus*, p. 202, n. spp.; DÜRDEN, Tr. Dublin Soc. (n. s.) vii.
Protopolythoa, n. n., type *Gemaria variabilis* Duer., p. 562; *grandis*, n. sp., p. 563; VERRILL, Tr. Connect. Ac. x.
Zoanthus proteus, n. sp., p. 561; VERRILL, t. c.
Z. sansibaricus, p. 121, Taf. iii, fig. 4, v, fig. 7, vii, figg. 1 & 3; *stuhlmanni*, p. 123, Taf. v, fig. 8, vii, fig. 4, Zanzibar, n. spp.; CARLGREN, 2 Beiheft Hamburg Anst. xvii.

MADREPORARIA.

GENERAL BIOLOGY.

- Anatomy, histology and affinities of *Neohelia porcellana* (Moseley), p. 591; PRATT, Zool. Results (Willey), pt. v.
 Anatomy and Histology. *Cenopammia*; GARDINER, op. cit. pt. iv.
 Coral Reefs; AGASSIZ, Amer. J. Sci. (4) ix; VERRILL, t. c.
 Geology, p. 1; ANDREWS, Bull. Mus. Harvard xxxviii.
 Coral Skeleton. Nomenclature and Taxonomic Value, p. 4; GREGORY, Pal. Ind. (ser. ix) pt. ii.
 Mesenteries and Septa of Madreporaria, their order of appearance; DÜRDEN, Johns Hopkins Univ. Circ. xix, No. 146, p. 47.
 Structure of *Porites*, p. 487; BERNARD, J. Linn. Soc. xxvii.
Seriatopora galls caused by *Hapalocarcinus marsupialis* Stimpson, described and figured; COLMAN, W. G. Brachyura from Torres Straits. Tr. Linn. Soc. London (2) viii, p. 45 and pl. 3, figg. 38-40.

DISTRIBUTION.

- Bermudas. *Madreporaria*, p. 551; VERRILL, Tr. Connect. Ac. x.
 West Indies. Species of *Madrepora*; GREGORY, Ann. Nat. Hist. (7) vi.
 Christmas Island. Fossil Corals; GREGORY, Monogr. Christmas Id. Andrews.
 Madreporaria, p. 119; BERNARD, P. Zool. Soc. London 1900.
 †California, San Pedro. *Caryophyllia* from the Pleistocene; VAUGHAN, P. U. S. Mus. xxiii, p. 199.
 †United States. Neocene corals, p. 179; GANE, P. U. S. Mus. xxii.
 †Tertiary Corals, p. 1; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †King Charles Land. A Neocomian Coral, p. 5; LINDSTRÖM, Ofv. Ak. Forh. 57.
 †Somaliland. Fossil Corals, p. 26; GREGORY, Quart. J. Geol. Soc. 56.
 †Cutch. Jurassic Corals, p. 1; GREGORY, Pal. Ind. (ser. ix), ii, Pt. 2.
 †Burmah. Miocene Corals; NOETLING, Verh. Ak. Amsterdam (II Sect.) vii, No. 2.
 †Japan, East Coast. *Turbinolida*; VAUGHAN, P. U. S. Mus. xxii, p. 200.

SYSTEMATIC.

- †*Acanthastrea patula* (Dana) var. *paucidentata*, n. v., p. 218; GREGORY, Monogr. Christmas Id. Andrews.
 †*Aldrichia* n. g., p. 70, *elegans*, n. sp., p. 71; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*Amphiasstraæa piriformis*, n. sp., p. 71; GREGORY, Pal. Ind. (ser. ix), ii, Pt. 2.

- †*Amphihelia natchitochensis*, n. sp., p. 124; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Anabacia acaulis*, p. 175, *fungiformis*, p. 176, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*Anisocenia murrayi*, p. 220, *favoides*, p. 220, n. spp.; GREGORY, Monogr. Christmas Id. Andrews.
- †*Archaeoseris* n. g., p. 153, *thamnastroides*, n. sp., p. 153; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*Astrangia expansa*, p. 133, *ludoviciana*, p. 135, *harrisi*, p. 136, *wilcoxensis*, p. 137, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Astrocoenia bernensis* var. *indica* n. var., p. 62; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- A. pumpellyi*, p. 149, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- Astrocoenia* nov. nom., p. 149; VAUGHAN, t. c.
- †*Astrohelia neglecta*, p. 114, *burnsi*, p. 115, n. spp.; VAUGHAN, t. c.
- †*Balanophyllia elongata*, n. sp., p. 164 & 175, *desmophyllum* var. *microcostata* n. var., p. 166, *irrorata* var. *coniformis* n. var., p. 170, *inauris*, p. 171, *ponderosa*, p. 173, *annularis*, p. 174, *augustinensis*, p. 174, n. spp., *caulifera* var. *multigranosa* n. var., p. 177; VAUGHAN, t. c.
- †*Calamophyllia aylmeri*, n. sp., p. 31; GREGORY, Quart. J. Geol. Soc. 56.
- †*Caryophyllia arnoldi*, n. sp., p. 199; VAUGHAN, P. U. S. Mus. xxii.
- †*C. dalli*, p. 110, *texana*, p. 111, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Centrastraæa kobyi*, n. sp., p. 145; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*Ceratotrochus alcockianus*, n. sp., from Miocene of Burmah, not diagnosed, pp. 25 & 44; NOETLING, Verh. Ak. Amsterdam (II Sect.) vii, No. 2.
- †*Calohelia* n. g., p. 125, *wagneriana*, p. 127, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Caloria andrewsi*, n. sp., p. 212; GREGORY, Monogr. Christmas Id. Andrews.
- †*Calomilia indica*, n. sp., p. 40; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- Cænozummia willeyi*, n. sp., Lifu; GARDINER, Zool. Results (Willey) Pt. iv, p. 357.
- †*Columnastræa bicoronata*, p. 32, *phillipsiae*, p. 33, *maxima*, p. 34, n. spp.; GREGORY, Quart. J. Geol. Soc. 56.
- †*Comoseris jumarensæ*, n. sp., p. 157, *jumarensæ radiata*, n. subsp., p. 157, *jumarensæ irregularis*, n. subsp., p. 158, *discontinua*, p. 159, *planu*, p. 160, *microphyllioides*, p. 161, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*Complexastræa kachensis*, p. 120, n. sp.; GREGORY, t. c.
- †*Coscinarea andrewsi*, n. sp., p. 221; GREGORY, Monogr. Christmas Id. Andrews.
- †*Cyclolites phillipsiae*, n. sp., p. 36; GREGORY, Quart. J. Geol. Soc. 56.
- †*Dendrophyllia striata*, *lisbonensis*, p. 191, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Dichocoenia alabamensis*, p. 139, n. sp.; VAUGHAN, t. c.
- †*Dimorpharæa stellans*, p. 189, *distincta*, p. 190, *continua*, p. 191, *orbica*, p. 191, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*Dimorphustræa sigillum*, p. 139, n. sp.; GREGORY, t. c.
- †*Endopachys macrurii* var. *tenuæ*, n. var., p. 188, *lonsdalei*, p. 189, *shaleri*, p. 190, *minutum*, p. 190, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Ethnotidae* nov. fam., p. 161; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*Euporaemia conradi* n. n., p. 183; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*Favia baryphyllioides*, n. sp., p. 69; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- †*F. merriami*, p. 142, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- †*F. somaliensis*, p. 35, n. sp.; GREGORY, Quart. J. Geol. Soc. 56.

- [†]*Flabellum conoideum*, p. 56, *johsoni*, p. 59, *lerchi*, p. 59, *mortonii*, p. 66, *californicum*, p. 69, *rhomboideum*, p. 69, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- [†]*F. conoideum* var. *matthewense* n. var., p. 58, *cuneiforme* var. *acutiforme* n. var., p. 63, *cuneiforme* var. *fragile* n. var., p. 63, *cuneiforme* var. *magnocostatum* n. var., p. 65; VAUGHAN, t. c.
- [†]*F. intermedium* Mich. Turin, pp. 78 & 82; LONGHI, Atti Soc. Veneto-Trent. iii, 1897.
- [†]*Frechia* n. g., p. 167, *cornutiformis*, p. 168, n. sp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- [†]*Genabacia kachensis*, p. 177, n. sp.; GREGORY, t. c.
- Goniastrea auricularia*, n. sp., p. 124; BERNARD, P. Zool. Soc. London 1900.
- [†]*Goniopora turbinata*, n. sp., p. 43; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- [†]*Hainesiastrea* n. g., p. 143, *conferta*, p. 145, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- [†]*Ieastrea hemisphaerica*, p. 127, *exserta*, p. 128, *parva*, p. 129, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- [†]*Ieastrocenia* n. g., p. 130, *kachensis*, n. sp., p. 131; GREGORY, t. c.
- [†]*Kobya* n. g. p. 169, *crassolamellosa*, p. 170, *cancellata*, p. 171, *lenticulata*, p. 172, n. spp.; GREGORY, t. c.
- [†]*Latimæandra humilis*, n. sp., p. 152; GREGORY, t. c.
- [†]*Levirapifer* n. g., p. 200, *orientalis*, n. sp., p. 201; VAUGHAN, P. U. S. Mus. xxii.
- [†]*Litharea colæ*, p. 37, *parkinsoni*, p. 37, n. spp.; GREGORY, Quart. J. Geol. Soc. 56.
- [†]*Lophomilia tenuicaulata*, n. sp., p. 37; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- [†]*Madracis ganei*, p. 128, *johsoni*, p. 129, *gregorioi*, p. 130, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- Madrepora muricata*, *prolifera cervicornis*, *palmata*, p. 20, West Indies; GREGORY, Ann. Nat. Hist. (7) vi.
- Madrepora (Isopora) brooki*, p. 120, n. sp.; BERNARD, P. Zool. Soc. London 1900.
- [†]*Mæandrina equisepta*, n. sp., p. 212; GREGORY, Monogr. Christmas Id. Andrews.
- [†]*Mesomorpha duncani*, p. 159, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- [†]*Metethmos* n. g., p. 165, *blanfordi*, p. 165, *griesbachi*, p. 166, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- [†]*M. asymmetrica*, n. sp., p. 36; GREGORY, Quart. J. Geol. Soc. 56.
- [†]*Microsolena variolata*, p. 184, *subturbinata*, p. 183, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- Montipora spongilla*, *parasitica*, p. 122, n. spp.; BERNARD, P. Zool. Soc. London 1900.
- [†]*Monilivalvia paleta*, p. 84, *cornutiformis*, p. 85, *frustriformis*, p. 98, *chariensis*, p. 97, *kachensis*, p. 106, *culullus*, p. 111, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
- [†]*M. cornutiformis*, *typica*, *crassa*, *spissiradata*, *obliquata*, *cordata*, *elliptica*, *vasiformis*, pp. 86-97. Table of Variations, GREGORY, t. c.
- [†]*Oculina singletti*, p. 120, *alabamensis*, p. 121, *harrisi*, p. 122, *aldrichi*, p. 123, *smithi*, p. 123, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
- [†]*Orbicella murrayi*, n. sp., p. 215, *quadrangularis* var. *columnata* n. v., p. 217, *præheliopora*, n. sp., p. 217; GREGORY, Monogr. Christmas Id. Andrews.
- [†]*Paracyathus alternatus*, p. 105, *granulosus*, p. 107, *bellus*, p. 108, *rugosus*, p. 109, *cylindricus*, p. 109, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.

- †*Parasmilia ludoviciana*, n. sp., p. 113; VAUGHAN, t. c.
 †*Placosmilia kachensis*, p. 76, *californicus*, p. 77, *scaliformis*, p. 76, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Platycoenia* n. g., p. 150, *jacksonensis*, p. 150, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
Pleastraea goodei, n. sp., p. 553; VERRILL, Tr. Connect. Ac. x.
 †*Porites bellii*, n. sp., p. 223; GREGORY, Monogr. Christmas Id. Andrew.
 †*Prionastraea crassisepta*, n. sp., p. 34; GREGORY, Quart. J. Geol. Soc. 58.
 †*Protethmos* n. g., p. 162, *oldhami*, p. 164, *duncani*, p. 164, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Rhectopeamnia* n. g., p. 183, *claibornensis*, n. sp., p. 184; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*Sematethmos* n. g., p. 168, *sinuosa*, p. 169, n. sp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Siderastrea hexagonalis*, p. 155, n. sp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*Sphenotrochus claibornensis*, p. 85, n. sp.; VAUGHAN, t. c.
 †*Stephanocenia fairbanksi*, p. 151, n. sp.; VAUGHAN, t. c.
 †*S. magna*, n. sp., p. 65; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Stephanomorpha* n. g., p. 156, *monticuliformis*, p. 157; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*Steriphonotrochus* n. g., p. 112, *pulcher*, n. sp., p. 113; VAUGHAN, t. c.
 †*Stibastrea structa*, p. 147, *peninsula*, p. 148, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Styliina kachensis*, n. sp., p. 56; GREGORY, t. c.
 †*S. subtubulata*, n. sp., p. 31; GREGORY, Quart. J. Geol. Soc. 56.
 †*Stylophora minutissima*, p. 131, *ponderosa*, p. 132, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*S. frondosa*, n. sp., p. 30; GREGORY, Quart. J. Geol. Soc. 56.
 †*Stylosmilia trapeziformis*, n. sp., p. 47; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Thamnastraea amorphia*, p. 194, *tuberosa*, p. 195, n. spp.; GREGORY, t. c.
 †*Thamnastraea crateriformis*, p. 135, n. sp., *mayeri* Koby var. *indica*, n. var. *valfinensis* Koby var. *kachensis*, n. var., p. 137; GREGORY, t. c.
 †*Thecoclyathus nathersti*, n. sp., p. 5; LINDSTRÖM, Ofv. Ak. Forh. 57.
 †*Tricycloseris triangularis*, p. 186, *patelliformis*, p. 187, n. spp.; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Trocharcea patelliformis*, p. 178, n. sp.; GREGORY, t. c.
 †*Trochocyathus hyatti*, p. 93, n. sp., *lunuliformis* var. *montgomeryensis* n. var., p. 94, *californianus*, p. 96, *depressus*, p. 97, *stantoni*, p. 98, *cingulatus*, p. 99, n. spp.; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*T. woolmani*, n. sp., p. 436; VAUGHAN, P. Ac. Philad. 1900.
 †*Trochoplegma* n. g., p. 179, *tenuilamellosa*, n. sp., p. 180; GREGORY, Pal. Ind. (ser. ix.) ii, Pt. 2.
 †*Trochosmilia indica*, n. sp., p. 80; GREGORY, t. c.
 †*Turbinacia erythreensis*, n. sp., p. 39; GREGORY, Quart. J. Geol. Soc. 56.
 †*Turbinaria (?) alabamensis*, n. sp., p. 194; VAUGHAN, Mon. U. S. Geol. Surv. xxxix.
 †*Turbinolia wauuboeensis*, p. 88, *claibornensis*, p. 90, *insignifica*, p. 91, n. spp.; VAUGHAN, t. c.

†RUGOSA.

DISTRIBUTION.

Carboniferous corals of Algeria; JOLEAUD, Mem. Ac. Vaucluse xix, p. 397.

+*TABULATA*.

INCERTÆ SEDIS.

DISTRIBUTION.

+Arctic fossil corals; WHITFIELD, Bull. Amer. Mus. xiii, p. 19.

SYSTEMATIC.

+*Calapæcia borealis*, n. sp., p. 20; WHITFIELD, Bull. Amer. Mus. xiii.

+*Halyrites agglomeratiformis*, n. sp., p. 20; WHITFIELD, t. c.

+*Heliolites perelegans*, n. sp., p. 21; WHITFIELD, t. c.

+*Receptaculites pearyi*, n. sp., p. 19; WHITFIELD, t. c.

XVII. SPONGIÆ.

BY

PROFESSOR E. A. MINCHIN.

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INTRODUCTION.

I. The number of publications dealing with sponges recorded this year reaches the large total of 84, exclusive of reviews or abstracts. Of this number, however, about 16 were published previously to the year 1900, but after deducting these, the balance is still a heavy one for a single year. The list includes many publications of great interest in almost all branches of investigation.

II. Biology. MAAS (39) furnishes for the first time the much needed demonstration of what had become, for theoretical reasons, an almost certain proposition, namely that the flat epithelium lining the gastral cavity of the Sycons is not of "endodermal" origin, i.e. derived by flattening out of collar cells of the gastral layer, but arises from ingrowths of the dermal layer, while the gastral layer furnishes collar cells only. The author was further able to make some remarkable observations on the formation of spicules in these forms. SCHULZE (63) publishes the full account of his important observations on the histology of Hexactinellids, of which a preliminary account was recorded last year. It has been the author's good fortune to be the first who has had properly preserved material of these sponges in his hands, so that he has been in a position to give us a detailed description of their collar cells, hitherto unknown. TOPSENT (69, 70) maintains his remarkable statements that in *Clionidae* the incurrent and excurrent canals are in direct continuity, and not by way of the chambers as usually believed. He asserts that the chambers have no prosopyles, but are simply blind diverticula of the excurrent canals. As a proof of these propositions he points out that the pieces of calcareous matter cast out by the sponge in the process of its excavations are too large to pass through any prosopyles if they existed, and must travel direct from the incurrent to the excurrent system. But is it certain that the calcareous corpuscles, detached by the *Cliona* in so mysterious a fashion, pass first into the incurrent system? If so, this arrangement of the canal system is perhaps to be regarded as a special peculiarity of boring sponges, an adaptation to their mode of life. The observations of EVANS (15) on the formation of the gemmule of *Ephydatia*, are a remarkable contribution not only to our knowledge of the *Spongillinae*, but also to the general biology of the cell. The scleroblasts which form the amphidiscs of the outer coat do so at some distance from their definitive position, which they attain by active migration, like so many ants, carrying their spicules with them. Original observations on the development and histology of Ascons will be found in MINCHIN (46, 47). Under physiology we have an important contribution to the subject of nutrition by ZEMLITSCHKA (81), and observations on pigments from MACMUNN (45), and TOPSENT (70).

III. Under the head of Geographical Distribution the most noteworthy feature is perhaps the contributions to our knowledge of Pacific sponge faunas by KIESCHNICK (26), KIRKPATRICK (27, 28), SCHULZ (60) and THIELE (68). TOPSENT (70) continues his valuable monograph of the sponges of the coasts of France by a description of the Hadromerina, and LAMBE (32) gives a list, complete to date, of sponges known from the coasts of Canada and Alaska. The only addition to our British Fauna is made by WALLER (72) who describes a new species, but since the author announces that "he intends to go no farther than Dr Bowerbank" in matters of classification and taxonomy, it is by no means improbable that this n. sp. may prove to be a synonym. The complete list of Hexactinellids from the Indian Ocean, worked out by Schulze, is given by ALCOCK (1). New freshwater sponges are described by EVANS (15) and MACKAY

(44), and WELTNER (74) gives an account of the Spongilline fauna of the Australian region.

Under the head of Palaeontology, the most formidable contribution is the great monograph of the *Dictyospongidae*, with its imposing array of new subfamilies, genera, and species, and its revolutionary system of nomenclature, by HALL & CLARKE (20), published in 1898, but not seen by any previous recorder. Lists of Cretaceous sponges of Gt. Britain are given by JUKES-BROWNE & HILL (25) and by ROWE (55); of Bohemia by ZAHÁLKA (78, 79); of the Silurian of Scotland by PEACH & HORNE (50). Other important palaeontological works are those of HINDE (22), ROTHPLETZ (52, 53), and SCHRAMMEN (57).

IV. The most sensational novelty of this or of recent years is the remarkable form *Astrosclera*, discovered by Willey and described by LISTER (38), which, with a skeleton reported to consist of aragonite, and, in any case, composed of elements of most unusual form, is perhaps the representative of a new primary division of the sponges, though here placed, for convenience' sake, under the Calcarea.

MINCHIN (47, p. 111) made the suggestion that many fossil Pharetrone sponges would prove on further investigation to belong to the section Lithonina, hitherto only represented by the recent *Petrostroma schulzei* of Döderlein. Scarcely was the ink dry with which this prophecy was written, before a paper was published by HINDE (22, 23) describing several fossil genera, some new, some old, which were shown to be true Lithonina. In quick succession appeared a memoir by KIRKPATRICK (28) in which a species belonging to one of Hinde's new genera, *Plectroninia*, was described amongst a collection of recent sponges from Funafuti. Thus our knowledge of the Lithonina has advanced by very rapid strides during the past year. New Calcarea are also described by LAMBE (29, 31). Of Hexactinellids SCHULZE (61, 62, 63, 65) describes forms new and old from the Mediterranean, Red Sea, Arctic Ocean and Indian Ocean. Reference has already been made to the memoir of HALL & CLARKE (20), as an addition to our knowledge of fossil Hexactinellids, and to the works of KIESCHNICK (26), KIRKPATRICK (27, 28), LAMBE (31), SCHULZ (60), THIELE (68) and TOPSENTE (70), for many additions to the systematic study of Demospongiae. The following table is a summary of the new genera, species, etc., recorded below:—

	New genera	Altered generic names	New species	New varieties
Calcarea	2+2†		11+6†	
Hexactinellida	5+21†	3†	11+80†	1†
Demospongiae				
(1) Tetraxonida	2†		27+8†	
(2) Monaxonida	1		46	3
(3) Keratosa	1†		5+ 1†	
Incertae Sedis			1†	
Total	8+26†	3†	100+96†	3+ 1†

Under the Myxospongida, Octactinellida, and Heteractinellida, there is nothing new to record.

Finally under the head of general treatises attention may be drawn to MINCHIN (47) and ZITTEL (82).

† Extinct forms.

CORRIGENDA in Record of Spongiae for 1899.

- p. 2. BEEDE (2) incorrectly cited; see (4) of present Record.
 p. 3. HALL & CLARKE (18) incorrectly cited; see (20) of present Record.
 LISTER (23) was published in 1900; see (37) of present Record.
 p. 12. Under "Fossil Sponges"; "*Somospongia*" should be *Somphospongia* (vide p. 25 infra); "*Shelleya*" should be *Stolleya* (vide p. 39 infra); "*Cephalorhapidites*" should be *Cephalorhaphidites* (vide p. 40 infra).
-

TITLES*.

1. ALCOCK, A. W. A summary of the Deep-Sea Zoological work of the Royal Indian Marine Survey Ship *Investigator* from 1884 to 1897. Reprinted from Scientific Memoirs by Medical Officers of the Army of India, Part xi; Calcutta, 1899. [III, A, a, iii.]
2. ANON. *Lubomirskia baicalensis*. Annuaire Mus. St. Petersb. 1899, No. 4 (1900), Notes Occasionnelles, p. xv. [IV, d, ii, b.]
3. BARLOW, A. E. Report on the Geology and the natural resources of the area included by the Nipissing and Temiscaming Map Sheets, comprising portions of the District of Nipissing, Ontario, and of the County of Pontiac, Quebec. Rep. Geol. Surv. Canada (n. s.) x, 1897 (1899), Report I, 302 pp. [III, B, iv, h.]
4. BEEDE, J. W. New Fossils from the Kansas Coal Measures. Kansas quart. viii, pp. 123-130 (No. 3, July, 1899), pls. xxxii & xxxiii. [III, B, iv, d, IV, B, ii.]
5. BOWNOCKER, J. A. The Palaeontology and Stratigraphy of the Corniferous Rocks of Ohio. Bull. Denison Univ. xi, Article II, pp. 11-40, pls. ii-viii (May, 1898). [III, B, iv, f.]
6. BURHENNE, H. Beitrag zur Kenntniss der Fauna der Tentaculitenschiefer im Lahngebiet, mit besonderer Berücksichtigung der Schiefer von Leun unweit Braufels. Abh. Preuss. geol. Landesanst. N. F. Heft 29, 1899, 56 pp., 5 pls., with explanations. [III, B, iv, f.]
- CALKINS, G. N. See DELAGE & HEROUARD.
- CARLGREN, O. Ueber die Einwirkung des constanten galvanischen Stromes auf niedere Organismen. Zweite Mittheilung; Versuche an verschiedenen Entwicklungsstadien einiger Evertebraten. Arch. Physiol. 1900, Heft v & vi (July, 1900), pp. 465-480.
Review by R. PEARL in Amer. Natural. xxxiv, No. 408 (Dec. 1900), pp. 977-979. [II, C, vii.]
- CHUN, C. Aus den Tiefen des Weltmeeres. Jena (Gustav Fischer), 1900, 549 pp.
General account of deep sea sponges, with numerous figures, pp. 475-479. [IV, C, i, ii.]

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Paper or Work referred to.

The Symbols in [] refer to the divisions of the Subject-Index II, III, IV. Those referring to the Systematic portion, IV, A-G, are inserted only when some question of definite importance to the systematist is dealt with in the work.

9. CLARKE, J. M. A Sphinctozoan Calcisponge from the Upper Carboniferous of Eastern Nebraska. Amer. Geol. xx, No. 6 (Dec. 1897), pp. 387-392, pl. xxiii. [III, B, iv, d. IV, B, ii.]
 —. See HALL & CLARKE (20).
10. CONANT, F. S. Notes on zoological collecting in Jamaica, W. I. Johns Hopkins Univ. Circ. xix, pp. 23-25 (No. 143, March, 1900). With chart in the text.
 Occurrence of purple, green, red, brown, black, white, and yellow sponges, not further identified. [II, D, vi.]
11. DATTA, P. N. Notes on the Geology of the Country along the Mandalay-Kunlon Ferry Railway Route, Upper Burmah. General Report of the work carried on by the Geol. Survey of India for the period from the 1st of April 1899 to the 31st March 1900. Calcutta, 1900.
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II. BIOLOGY.

A. EVOLUTION.

(i) General Principles.

Homoplasy in the skeleton of Lithonina and Lithistida. Two mechanical problems are solved in practically the same manner and independently, namely (1) the economization of energy in the production of water currents, and (2) the best disposition of rigid material to resist stresses in the organism ; SOLLAS in discussion on HINDE (22).

(ii) Relations of Sponges.

Position of Sponges in the Animal Kingdom discussed
drawn that they are not Coelentera, but that there
as to their origin, between which it is not pos-

present, namely (1) that they are descended from Choanoflagellate ancestors, independently of other Metazoa, hence *Parazoaa* Sollas, and (2) that they have a common origin with other Metazoa as far as the gastrula stage, after which they have evolved in a different direction, their germ-layers becoming reversed in position, hence *Enantiozoa* Delage; MINCHIN (47) pp. 158–161. Sponges regarded as *Parazoaa*, one of the two primary branches of the Metazoa, the other being the *Enterozoa*; LANKESTER (33) pp. 1, 2.

Porifera classed as Cœlenterata; DYBOWSKI (13) p. 446.—As a sub-branch of the sub-kingdom Cœlenterata; ZITTEL (82) p. 41.

(iii) *Phylogeny.*

Phylogeny of Sponges in General; MINCHIN (47) pp. 161, 162.—Sponges and Radiolarians form the only extensive Pre-Cambrian fauna: speculations as to the origin of Sponges from Protozoa; HUTTON (24) pp. 348, 349.

Phylogeny of Calcarea; MINCHIN (47) p. 109.

Phylogeny of Demospongiae, with genealogical tree; KIESCHNICK (26) pp. 579–581.—Phylogeny of Demospongiae; MINCHIN (47) pp. 162–164.—Descent and Affinities of the Oligosilicina (*Chondrosinæ*); THIELE (68) p. 65. [See also TOPSENT (70), b, iv, c (p. 16 infra).]

B. MORPHOLOGY.

(i) *General Accounts.*

The Morphology and Life History of Sponges in General; MINCHIN (47) pp. 2–85.—General Accounts of Sponge Organisation; HALL & CLARKE (20) pp. 14–17; ZITTEL (82) pp. 41–45.—Popular accounts of the Organisation of Sponges; FIELDER (16) & (17); PANKHURST (49).

(ii) *External Characters.*

(a) **Attachment.**—In Sponges generally; MINCHIN (47) pp. 2 & 3.—Mode of attachment of Sponges, especially *Dictyospongidae*: in *Thysanodictya* and *Phrymodictya* “by means of a frill or collar (*periloph*) encircling the truncated base”; HALL & CLARK (20) p. 17.

(b) **Form and Mode of Growth.**—In Sponges generally; MINCHIN (47) pp. 2–23.—Forms of Sponges, general account; HALL & CLARKE (20) p. 16.—Variations and Genetic Relations of Form in *Dictyospongidae*; HALL & CLARKE (20) pp. 33–36.—Varieties of form and growth in *Clathrina coriacea* correlated with habitat; MINCHIN (46) pp. 110–119.—Polymorphism of *Cliona celata*, pp. 38–42, and *C. viridis*, pp. 89 & 93: they occur as boring forms, enveloping forms, and massive or raphyroid forms; TOPSENT (70) and (69) pp. 151 & 152.—Form varieties of Hadromerina generally, p. 13: of *Ficulina ficus*, p. 215: of *Suberites carnosus*, pp. 236 & 237: of *Tethyspira spinosa*, pp. 261 & 262; TOPSENT (70).—External Form and Appearance of Keratosa; SCHULZ (60) p. 528.

(c) **Colour.**—In Sponges generally; MINCHIN (47) pp. 24–26.—Colour varieties of *Clathrina coriacea*; MINCHIN (46) p. 120.—Colours of Hadromerina: generally due to zootherrhin, and varies from pale yellow to orange red. It is in the smaller species, especially, that the colour may be distinctive, and shows the richest tones, vermillion, scarlet, green, blue, etc.; TOPSENT (70) pp. 14 & 15.—Colour variations of *Cliona vastifica*, p. 60: of *C. schmidti*, p. 81: of *C. viridis*, p. 95: of *C. viridis*, var. *carteri*,

p. 100 : of *Hymedesmia bstellata*, p. 126 : of *Polymastia mammillaris*, p. 139 : of *Polymastia robusta*, p. 154 : of *Prosüberites longispina*, p. 175 : of *Terpios fugax*, due to presence or absence of invading Thallophytes, pp. 198 & 199 : of *Ficulina ficus*, p. 216 : of *Suberites domuncula*, p. 229, and *S. carnosus*, p. 238 : of *Mesapos stellifera*, p. 255 : of *Coppatias johnstoni*, p. 275 : of *Tuberella aaptos*, p. 293 : of *Tethya lyncurium*, p. 302 ; TOPSENT (70).—Colours of Keratosa ; SCHULZ (60) p. 528.

(d) **Consistence, Texture, Smell, etc.**—In Sponges generally, MINCHIN (47) p. 26.—Texture and consistence of Hadromerina ; TOPSENT (70) pp. 15 & 16.—Odour, like a laundry (“odeur de lessive”), of *Laxosuberites rugosus*, *Acanthella acuta*, *Plumohalichondria plumosa*, and *Stylo-tella columella*, p. 189: odour of sulphuretted hydrogen, in decomposing *Terpios fugax cerulea*, p. 203 : phosphoric odour in *Suberites domuncula*, p. 229 ; TOPSENT (70).

(iii) Anatomy of the Soft Tissues. Canal System.

Of the Olynthus and of Sponges in general ; MINCHIN (47) pp. 27–37.

The Canal System of the Calcarea ; MINCHIN (47) pp. 92–100.—Anatomy of *Clathrina coriacea* ; MINCHIN (46).—Canal System of *Plectroninia* ; HINDE (22) p. 56.—Anatomy and Canal System of *Astrosclera willeyana* ; LISTER (38) pp. 468–470.

Canal System of Hexactinellids ; MINCHIN (47) pp. 111–116.—Anatomy of *Aulocystis zittelii*, pp. 6 & 7, pl. ii, fig. 3, and *A. grayi*, pp. 2 & 3, pl. i, fig. 5 : of *Tretocalyx polae*, p. 9, pl. iii, fig. 1 ; SCHULZE (62).—Anatomy of *Schauardinia arctica*, pp. 87–93, pl. ii : of *Trichasterina borealis*, p. 102, pl. iv, figg. 1 & 2 : of *Scyphidium septentrionale*, p. 105, pl. iv, fig. 11 ; SCHULZE (63).

Canal System of Demospongiae ; MINCHIN (47) pp. 125–130.—Anatomy and Canal System of *Cliona celata* ; the so-called exhalant and inhalant canals are believed to be in direct continuity, so that the distinction between these two sorts of canals is arbitrary and artificial. Doubt is thrown upon the existence of prosopyles in the chambers ; in any case the calcareous corpuscles detached by the sponge are too large to pass through them, and must go direct from the inhalant to the exhalant passages ; TOPSENT (70) pp. 47–52, and (69).—Anatomy and Canal System of *Polymastia mammillaris*, pp. 139–143 : of *P. robusta*, pp. 152–155 : of *Quasiliina brevis*, pp. 161 & 162 : of *Prosüberites longispina*, pp. 175 & 176 : of *Ficulina ficus*, pp. 217 & 218 : of *Suberites domuncula*, p. 230 : of *S. carnosus*, pp. 239 & 240 : of *Rhizaxinella pyrifera*, p. 246 : of *Tuberella aaptos*, p. 291 : of *Tethya lyncurium*, pp. 303–306 ; TOPSENT (70).—Canal System of *Ephydatia blebbingia* ; EVANS (15) pp. 77 & 78.—Canal System of Keratosa ; SCHULZ (60) pp. 528 & 529.

(iv) Skeletal System.

(a) **General Accounts.**—MINCHIN (47) pp. 37–43.

(b) **Material of the Skeleton.**—Composition of the skeleton of *Astrosclera* ; the inorganic constituent is aragonite and not calcite as in true Calcarea ; the organic basis agrees in staining properties with that of calcareous sponge spicules ; LISTER (38) pp. 463–465.

Nature of skeletal material of *Receptaculites* ; the specimens examined show no trace of organic structure but are composed of two replacements, calcite first and silica afterwards ; ETHERIDGE & DUN (14) p. 76.

(c) **Morphology and Development of Skeletal Elements.**—Spicule formation and its relation to the crystalline nature of the spicule. In the formation of calcareous spicules [monaxons] two consecutive processes must be distinguished; (1) a purely organic, cellular activity, which determines the form; (2) an inorganic process of crystallization, which determines the contents, of the structures in question; MAAS (40).

Morphology of calcareous sponge spicules, pp. 101–103: development and phylogeny, pp. 107–109; MINCHIN (47).—Spicule formation in *Clathrina coriacea*; MINCHIN (46) pp. 135–138.—Spicule formation in *Sycandra setosa*. The monaxons arise each in a single mother cell, and there is never more than one cell on the smaller spicules of this class, but the large monaxons have numerous formative cells upon them, not derived from division of the mother cell, but from the dermal layer *de novo*. The first rudiment of the spicule is laid down very slowly within the cell, but as soon as it comes to project from the cell, it grows with great rapidity, apparently by a process of crystallization. The triradiates also arise each in a single mother cell as a concretion, but at a later stage they bear several formative cells. The quadriradiates are formed by addition of a fourth ray to a triradiate through the agency of cells of the dermal layer. Hence the triradiates of Sycons are formed differently from those of *Clathrinidae*, and similar calcareous spicules may have quite different origins and be phylogenetically independent of each other. The tri- and quadriradiates do not correspond in any way with the pores as regards number or position; MAAS (39) pp. 224–227.

Origin of the skeletal elements (spherules) of *Astrosclera*; each spherule originates in a single cell; with continued growth adjacent spherules come into contact, to the exclusion of the soft parts, and lose their spherical form and become polyhedral; LISTER (38) p. 465.

Morphology of Hexactinellid spicules; MINCHIN (47) pp. 116–118 and p. 120.—Morphology of the spicules of *Dictyospongidae*, pp. 29–33, figg. 4–7; the term *clemes* employed for rods with a series of bars along the sides, p. 20; HALL & CLARKE (20).

Morphology and Phylogeny of the spicules of Tetraxonida, pp. 130–135: of Monaxonida, pp. 137 & 138; MINCHIN (47). All tetraxon spicules of Tetractinellids to be considered as megascleres, all polyaxons as microscleres; THIELE (68) p. 64.—Skeletal structure and spiculation in *Hadromerina* generally. Siliceous sponges may be supposed to have possessed primitively only asters, certain of which increased in size, with reduction of the actines, to become megascleres, as in the calthropes of Pachastrellidae. By further reduction originated the diactinal and monactinal monaxons; TOPSENT (70) pp. 18–20: spiculation of *Ciona celata*; tendency to reduction of spiculation in this species; TOPSENT (69) pp. 155–157, and (70) p. 43.

Formation of amphidiscs round the gemmule of *Ephydatia blebbingia*. Each amphidisc is formed in a scleroblast in the tissues of the sponge body, and when it has attained its ultimate form, the scleroblast migrates with it in an amoeboid manner towards the gemmule and pushes its way between the cells of the columnar layer which secretes the chitinous coat. The amphidiscs are placed in position in the protective coat of the gemmule, and the scleroblasts then become modified to form part of the intermediate layer of the protective coat; EVANS (15) pp. 92–94.

Spongins fibres, structure, pp. 42, 43 & 140, 141; formation and growth, pp. 46 & 47; filaments of *Hircinia*, pp. 142 & 143; MINCHIN (47); Spongins fibres; SCHULZ (60) p. 529.

Alleged occurrence of spongins in the intervals between the vertical and horizontal spicular bands in *tHyphantesia* (*Dictyospongidae*, *Hexactinellida*, *Lyssacina*); HALL & CLARKE (20) p. 188.

Spicules of Octactinellida and Heteractinellida; MINCHIN (47) pp. 155 & 156.

(d) **Skeletal Anatomy.**—Arrangement of the spicules in the skeleton of Calcarea ; MINCHIN (47) pp. 103–107.—Structure of the skeleton of Pharetrones ; the spherulitic structure probably of secondary origin, not indicating any relationship with Astrosclera ; LISTER (38) pp. 473–479.—Skeleton of Pharetrones ; ZITTEL (82) pp. 62 & 63.—Structure of the skeleton of Lithonina ; HINDE (22).—Structure and Arrangement of skeleton of Astrosclera, pp. 467 & 468 : comparison with that of Pharetrones, pp. 473–479 ; LISTER (38).

Arrangement of the skeleton of Hexactinellids ; MINCHIN (47) pp. 118–120.—Skeletal Arrangement in Hexactinellida, and especially in *Dictyospongidae*, with two figures [one original] ; HALL & CLARKE (20) pp. 17–20.—Structure of *Receptaculites australis* ; ETHERIDGE & DUN (14).

Arrangement of the skeleton of Tetraxonida, pp. 135–137 ; of Monaxonia, pp. 138–140 ; MINCHIN (47).—Changes in skeletal structure correlated with changes in external form by growth, in *Cliona celata* ; TOPSENT (70) p. 41.

Arrangement and phylogeny of Keratose skeletons ; MINCHIN (47) pp. 141–144.—Skeletal Anatomy of Keratosa ; SCHULZ (60) p. 529.

[N.B. Details of the spiculation and skeletal anatomy of individual species, such as are found in every systematic description, are not recorded separately here.]

(v) *Histology.*

(a) **General Accounts.**—Histology of Sponges in General ; MINCHIN (47) pp. 43–63.

Histology of Calcarea ; MINCHIN (47) pp. 27–31 & pp. 107–109 : of *Clathrina coriacea* ; MINCHIN (46) : of Astrosclera *willeyana* ; LISTER (38) p. 469.

Histology of Hexactinellida ; MINCHIN (47) pp. 120 & 121 : of *Schauvilia arctica* ; SCHULZE (63) pp. 97–99, pl. iii.

Histology of *Cliona celata* ; TOPSENT (70) pp. 45 & 46 and (69) : of *Cliona viridis* ; TOPSENT (70) p. 97 : of *Ephydatia multidentata* ; WELTNER (74) p. 521 : of Keratosa ; SCHULZ (60) pp. 529 & 530.

(b) **Histology of Special Organs or Classes of Cells.**—Nervous system : doubts thrown upon the existence of any differentiated nerve cells in sponges ; MINCHIN (47) pp. 46–48.

“Cellules sphéruleuses”, their importance for systematic determinations, even in dried specimens ; TOPSENT (70) pp. 45 & 46 : their probable homology with the porocytes of Calcarea ; MINCHIN (46) p. 135, and (47) p. 50, and p. 144.—“Cellules sphéruleuses” of *Cliona celata*, p. 42 and pp. 45 & 46 : of *C. schmidti*, p. 81 : of *C. viridis*, p. 97 : of *C. viridis*, var. *carteri*, p. 101 : of *Spirastrella minax*, p. 109 : of *Polymastia mammillaris*, p. 143 : of *Quasillina bteris*, p. 162 : of *Prosuberites longispina*, p. 175 : of *Laroberites rugosus*, p. 187 : of *Rhizaxinella pyriformis*, p. 246 : two kinds, present in *Mesaposa stellifera*, p. 255 : of *Tethyspira spinosa*, p. 259 : of *Tuberella aaptos*, p. 291 : of *Tethya lyncurium*, p. 306 ; TOPSENT (70).

Collar cells of *Ascandra falcata*, *Clathrina coriacea*, and *Leucosolenia complicata* ; MINCHIN (47) pp. 54–56, fig. 52 : of *Clathrina coriacea* ; MINCHIN (46) p. 133 : of Astrosclera ; LISTER (38) p. 469 : of *Schaudinnia arctica* ; SCHULZE (63) p. 98, pl. iii : of *Cliona celata*, united by their collars ; TOPSENT (69) pp. 159 & 168 ; (70) pp. 46 & 51.

(vi) *The Germ Layer Question.*

The sponges composed of two layers, with archaeocytes ; reasons against regarding the parenchymal tissues as mesoderm ; MINCHIN (47) p. 63.

C. PHYSIOLOGY.

(i) **General Accounts.**—MINCHIN (47) pp. 85-92.

(ii) **Nutrition.**—Ingestion of solid particles by collar cells in *Syconia raphanus*; only the collar cells take up suspended particles, and hand them on to cells of the parenchyma, if nutritious; if not they cast them out again into the water. The collar cells near the prosopyles are the first to ingest particles; ZEMLITSCHKA (81).—Ingestion by collar cells and amœboid cells in *Cliona celata*; TOPSENT (69) p. 170.

(iii) **Respiration.**—Vacant.

(iv) **Secretion and Excretion.—Pigments, Ferments, etc.**—

Purple pigments of *Suberites wilsoni* and *Polyopogon* [= *Poliopogon*] *gigas*; that of the former is "Spongioporphyrin" (Lankester), but that of the latter is quite different from spongioporphyrin; MACMUNN (45).—Pigment granules in the amœboid cells and in the collar cells of *Cliona vastifica* and *C. lobata*, pp. 60 & 73; pigment in the cellules sphéruleuses of *C. schmidtii*, p. 81; pigments of *Cliona viridis*, p. 95; of *Prosuberites longispina*, p. 175; of *Laxosuberites rugosus*, p. 186; (zooerythrin) of *Ficulina fuscus*, p. 216; of *Mesapos stellifera*, p. 255; of *Tethyspira spinosa*, p. 259; of *Tuberella aaptos*, pp. 291 & 293; TOPSENT (70).

(v) **Irritability, Contractility, etc.**—Contractility and irritability developed to a high degree in Hadromerina, p. 16; Contractility of *Tethya lyncurium*, pp. 303 & 304; TOPSENT (70).

(vi) **Individuality.**—Of sponges in general; MINCHIN (46) p. 119, and (47) pp. 89-91.—Of sponges, especially of *Dictyospongidae*; HALL & CLARKE (20) p. 16.

(vii) **Miscellanea.—Experimental Physiology.**—Sponge larvae uninfluenced by the action of the constant current; no trace of galvanotaxis; CARLGREN (7) pp. 466 & 478.

D. BIONOMICS.

(i) **General Accounts.**—MINCHIN (47) pp. 88 & 89.

(ii) **Special Habits.**—*Cliona celata*, its methods of perforating shells, rocks, etc.; it attacks the shells of living animals as well as dead ones, and does much damage to oysters, producing what is termed the *maladie du pain d'épices*; its effects upon the oysters, and remedies against the sponge; TOPSENT (69) pp. 152 & 153, 173 & 174; (70) p. 18 and pp. 36-38.

(iii) **Habitat.**—*Clathrina coriacea*; MINCHIN (46).—Mode of Occurrence of *Dictyospongidae*; HALL & CLARKE (20) pp. 37-41.—*Dictyospongidae*, "the sandy matrix on the surface of which their Devonian progenitors [i.e. of the Hexactinellida] lived indicates a comparatively shallow sea", HINDE in review.—Habitats of Hadromerina on French Coasts; TOPSENT (70).—*Cliona celata*; TOPSENT (69).

(iv) **Defence and Protection.**—Vacant.

(v) **Enemies of Sponges.**—Vacant.

(vi) **Parasitism and Commensalism.**—Symbiosis in sponges generally; in *Dictyospongidae* markings occur which appear to indicate the presence of a symbiotic Annelid; HALL & CLARKE (20) pp. 21 & 22.—

Peculiar basket-shaped bodies in *Ephydatia blebbingia*, of uncertain nature : perhaps they are parasitic sponges ; EVANS (15) pp. 74 & 75, footnote.—Occurrence of *Alpheus* in Sponges ; DUDERDEN (12) p. 613.—“*Alpheus-like Crustacea*” ; CONANT (10) p. 25.—*Hymedesmia bistrigata* occupied by *Stephanoscyphus mirabilis*, p. 128 : Commensal algae (*Beggiatoa*) in *Terpios fugax*, giving the sponge its normal blue colour, pp. 199 & 203 : *Suberites domuncula*, commensal with *Pugurus* : with *Tritaea gibbosa*, an Amphipod : and with *Stephanoscyphus mirabilis*, pp. 227-229 ; TOPSENT (70).

(vii) **Sponges as Geological Agents.**—Relation of Sponges to Flints ; PANKHURST (49).—Mode of preservation of *Dictyospongidae* ; HALL & CLARKE (20) pp. 36 & 37.—Mode of preservation of *Receptaculites australis* ; ETHERIDGE & DUN (14).

E. REPRODUCTION AND DEVELOPMENT.

(i) *Germ Cells, Fertilization.*

Oogenesis, Spermatogenesis, Maturation, and Fertilization, summary of present knowledge ; MINCHIN (47) pp. 60 & 61.

(ii) *Embryology.*

(a) **General Accounts.**—MINCHIN (47) pp. 67-85.

(b) **Early stages, larvae, and metamorphosis.**—Embryonic development of *Clathrina coriacea* and other Ascons : description of the larvae and metamorphosis ; MINCHIN (46).—Development of *Clathrina blanca* ; MINCHIN (47) pp. 68-75.—Metamorphosis of the larva of *Sycandra setosa*, and its development up to the Ascon stage, pp. 218-228 : development of *Sycandra raphanus* from the Ascon to the complete Sycon stage, pp. 228-236, pl. x, fig. 8, and pl. xii ; MAAS (39).—Ova and embryos of *Astroclera villeyana* ; LISTER (38) p. 470, figg. 8, 9, 10.

Embryology of Demospongiae ; MINCHIN (47) pp. 144 & 145.—Reproduction of Hadromerina : occurrence of ova and embryos ; TOPSENT (70) pp. 16 & 17.—Ova in *Cliona celata* ; TOPSENT (70) p. 53 and (69) p. 171.—Ova of *Cliona varians*, p. 65 : Ova and larvae of *Cliona lobata* : some *Clionidæ* seem to be oviparous, others viviparous, p. 74 : larvae in *Alectona millari*, p. 26 : ova in *Polymastia robusta*, p. 155 : ova in *Ficulina fuscus*, p. 221 : ova and embryos of *Tethya lyncurium*, p. 312 ; TOPSENT (70).

(c) **Organogeny.**—Development of the Canal System in *Sycandra raphanus* : the flat epithelium lining the gastral cavity does not arise by flattening out of gastral collar cells, but is derived from the dermal layer, which grows in between the radial tubes and interrupts the primitive continuity of the gastral collared epithelium ; MAAS (39) pp. 229-233.

(iii) *Asexual Reproduction.*

(a) **Fission and Vegetative Budding.**—General Account : formation of free buds in Ascons ; MINCHIN (47) pp. 63 & 64.

Budding in Hadromerina generally, pp. 17 & 18 : external buds in *Pseudosuberites sulphureus*, pp. 169 & 170 : budding in *Tethya lyncurium*, pp. 299-302 ; TOPSENT (70).

(b) **Germinal budding.**—General account of gemmule MINCHIN (47) pp. 65-67.—Gemmules of Hadromerina, pp. 17 *Cliona vastifica*, their structure, pp. 65-67 : of *Prosuberites* p. 183 : of *Ficulina fucus*, p. 222 : of *Suberites domuncula*, p. mules (?) in *Tethya lyncurium*, pp. 301 & 305 ; TOPSENT (70).—of *Ephydatia blebbingia* ; their structure, pp. 78 & 79, and pp. 81-103. Four classes of cells take part in the formation of the gemmule. (1) The reproductive portion of the gemmule is a cluster of yolk-containing wandering cells, no other cells enter its composition. (2) The chitinous coat is secreted by a layer of cells and (3) the coat of amphidiscs by scleroblasts. (4) They provide for the nutrition of these various cells. (2) and (4) pass away from the sponge body after fulfilling their functions; EVANS (15).—of *Ephydatia multidentata* ; WELTNER (74) p. 520.

F. MISCELLANEA.

(i) **Technique.**—Methods for the study of Ascons ; MINCHIN (47) pp. 145-147.—Methods for studying the minute structure of *Cliona willeyana* ; LISTER (38) pp. 462 & 463.—Methods for obtaining and rearing Sycon larvae, and for the preservation of the various species especially with a view to the study of spicule formation ; MELLER (19) pp. 217 & 218.—Methods for the study of *Cliona celata* and other siliceous sponges ; TOPSENT (69) pp. 157, 160, and 170.—Methods for working out fossil sponges in the Chalk ; ROWE (54).

(ii) **Economics.**—Regulation of Sponge Fisheries ; TORRANCE (19).

(iii) **Bibliography.**—MAAS (43).

(iv) **History.**—Summary of previous knowledge of Medit. Hexactinellids ; SCHULZE (61) pp. 1-3. History of previous knowledge of gemmule formation, pp. 82-89, and criticism of earlier observations, pp. 96-103 ; EVANS (15).

III. DISTRIBUTION.

A. GEOGRAPHICAL.

α. MARINE.

(i) **General.**—Geographical Distribution of sponges in MINCHIN (47), pp. 156-158.

(ii) **Atlantic Ocean and Adjacent Seas.**—British Coast : *desma affinis*, n. sp. ; WALLER (72).—Belgian Coast : a few common species.—Coasts of France : list of Hadromerina, and the distribution of the species ; TOPSENT (70) pp. 10-13.—Bay of Biscay : *Gellius* sp. ; ORUETA (48).—Mediterranean : *Hexactinella* sp. and *Sympagella nux* ; SCHULZE (61).—Hudson Bay : *Phakellia*, *Reniera*, *Suberites*, *Craniella* ; LAMBE (31).—Coasts of N. E. Canada and Greenland : *Reniera*, *Gellius*, *Iophon*, *Phakellia*, *Suberites*, *Tentorium*, *Craniella*, *Thenea*, *Leucoscyton*, *Grantia*, *Leucandra*, *Heteroplia*, *Amphoriscus*, in all 20 species, of which 11 new ; LAMBE (31).—Coasts of Canada : complete list of fauna, with general distribution of each species quoted, and bibliography ; LAMBE (32).—Beaufort, U.S.A. : common sponges ; WILSON (77) p. 1.

(iii) **Indian Ocean and Adjacent Seas.**—General list of Hexactinellids, compiled from SCHULZE [(57) Zool. Rec. 1894, (43) Zool. Rec. 1895, and (65), Present Rec.] ; ALCOCK (1).—Hexactinellida: *Phoronema*, *Hyalonema*, *Lophophysema*, n. g., *Euplectella*, *Regadrella*, *Dictyaulus*, *Lophocalyx*, *Farrea*, *Aphrocallistes*, including 13 spp. of which 7 are new ; SCHULZE (65).—Red Sea: Hexactinellids, *Autocystis* spp. and *Tretocalyx*, n. g., *pole*, n. sp. ; SCHULZE (62).

(iv) **Pacific Ocean and Adjacent Seas.**—Vancouver Island: *Leucandra taylori*, n. sp. ; LAMBE (29).—Coasts of Canada and Alaska: Sponge fauna ; LAMBE (32).—Western Pacific: *Astroclera willeyana* from Sandal Bay, Lifu, Loyalty Islands and Funafuti ; LISTER (38).—Funafuti: Sponge Fauna, *Astroclera*, *Plectroninia*, *Clathrina*, *Chondrilla*, *Corticium*, *Placinolopha*, *Placinastrella*, *Erylus*, *Cliona*, *Dyscionia*, n. g., *Latrunculia*, *Agelas*, *Tedania*, *Chondropsis*, *Pachychalina*, *Luffariella*, *Psammopemma*, *Stelospongia*, *Polyfibrospongia*, in all 21 spp., of which 11 are new ; KIRKPATRICK (28).—Sponges of Christmas Island: *Clathrina*, *Leucandra*, *Chondrosia*, *Chondrilla*, *Sidonops*, *Ecionema*, *Stelletta*, *Spirastrella*, *Pseudosuberites*, *Tethya*, *Hymeniacidon*, *Microciona*, *Iotrochota*, *Esperella*, *Desmacella*, *Stylorella*, *Rhizochalina*, *Gelliua*, *Reniera*, *Petrosia*, *Haliclona*, *Euspongia*, *Spongeliu*, in all 32 spp., of which 7 are new, and 2 n. var. ; KIRKPATRICK (27).—Thursday Island and Amboina, Keratosa : *Cacospongia*, *Carteriospongia*, *Euspongia*, *Hircinia*, *Spongelia*, 10 spp., of which 2 are new ; SCHULZ (60).—Ternate: *Dercitus*, *Chondrilla*, *Chondrosia*, *Tetilla*, *Ecionemia*, *Penares*, *Psammastra*, *Stelletta*, *Erylus*, *Geodia*, *Sydonope*, *Placospongia*, *Theonella*, *Scleritoderma*, *Coppatias*, *Jaspis*, *Holarea*, *Tethya*, *Cliona*, *Spirastrella*, *Ciocalyptia*, in all 41 spp., of which 24 are new ; THIELE (68).—Australia and Malay Archipelago: *Tetilla*, *Stelletta*, *Placospongia*, *Tethya*, *Spirastrella*, *Polymastia*, *Suberites*, *Chalina*, *Pachychalina*, *Phyllosiphonia*, *Siphonochalina*, *Toxochalina*, *Gellioides*, *Chondrocladia*, *Desmacella*, *Experiopsis*, *Echinodictyum*, *Raphidophlus*, *Acanthella*, in all 31 spp., of which 27 are new ; KIESCHNICK (26).—Victorian sponges, common shore forms, a popular account ; FIELDER (16) and (17).—Japan: *Euplectella* sp. ; TAKESHITA (67A).

(v) **Arctic Seas.**—Hexactinellids, *Schaudinnia arctica*, n. g., n. sp., *Trichasterina borealis*, n. g., n. sp., *Scyphidium septentrionale*, n. g., n. sp. ; SCHULZE (63).

(vi) **Antarctic Seas.**—Vacant.

β. FRESHWATER SPONGES.—SPONGILLINÆ.

(i) **Europe.**—Yorkshire : spicules of *Spongilla lacustris* and *Auviatilis* in sediments from various sources ; STILES (67).—Chemnitz : *Ephydatia mülleri*, *Spongilla lacustris*, var. *lieberkühnii* ; HEMPEL (21).—Lakes of Finland : *Ephydatia fluvialis*, *Spongilla lacustris* ; LEVANDER (35) and (36).—Finland: *Ephydatia mülleri*, *Spongilla fragilis*, *S. lacustris* ; STENROOS (86).—Alpine Lakes: *Ephydatia mülleri*, *Spongilla fragilis* and *lacustris* ; ZSCHOKKE (83) pp. 73, 74.

(ii) **Asia.**—Siamese Malay States: *Ephydatia blebbingia*, n. sp., from River Blebbing ; EVANS (15).

(iii) **Africa.**—Vacant.

(iv) **Australia.**—*Ephydatia multidentata*, *Spongilla fragilis*, and *Spongillid* sp. incert. ; WELTNER (74).

- Amphiporus bürgeri*,
Callinera n. g. *bürgeri*,
 t. c. also Ofv. Ak.
Carinesta, n. g., p. 50
 (Willey) Pt. v.
Carinoma tremaphora,
 Zool. Anz. xxiii.
Cerebratulus natans,
 p. 127, *sordidus*,
 p. 134, n. spp.;
C. viridis, Ceylon,
 xxiii.
C. torresianus, p. 127;
 PUNNETT, p. 127.
Drepanophorus,
 Zool. Results.
Eupolia melanostoma,
 n. sp., p. 117.
E. unistriata,
 ISLER, Zool.
E. rugosa, p. 57;
 (Willey) Pt.
Gononemertes,
 p. 321; Br.
Lineus albocinctus,
 Connect.
L. australis, q.
L. viviparus,
 & 180.
Nemertopsis,
 P. Irish.
Stichostemum,
 1900, 1.
Tæniosoma,
Tetrastemum,
 829; T.
Zygeupolis,
 Zool.

Anat.
 orifice
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(iv) PALAEONTOLOGY

(f) Devonian: Corniferous Rocks of Ohio, *Receptaculites*, *Stromatopora* [?], *Syringostroma* [?]; BOWNOCKER (5). — (Tentaculitenschiefer), *Receptaculites*; BURHENNE (6) p. 44.—*Dictyospongida*; HALL & CLARKE (20) pp. 58–62, 64–150.—Devonian Sponges in the American Museum of Natural History; WHITFIELD & HOVEY (76) pp. 190–193.—Helderbergian, N. America, *Hindia*, *Lysactinella*, *Receptaculites* and *Ischadites* spp.; Oriskany, *Hindia*, sp.; SCHUCHERT (58).

(g) Silurian: Of Scotland, lists of Sponges; PEACH & HORNE (50) pp. 668, 686, 708.—(Niagara group), Princess Marie Bay and Summit, Cape d'Urville, Arctic regions, *Receptaculites pearyi*, n. sp.; WHITFIELD (75).—(Utica Slate), *Cyathodictya* and *Sphaerodictya*, pp. 24, 26; *Dictyospongia danbyi*, pp. 63 & 64 and p. 60; HALL & CLARKE (20).

(h) Ordovician: Of Minnesota, Saint Peter Sandstone, *Rauffella fucoida*, n. sp.; SARDESON (56).—Lower Silurian of Baffin Land, *Receptaculites* and *Ischadites*; SCHUCHERT (59) pp. 152 & 153.—Cambro-Silurian of Canada, *Coscinopora*, *Receptaculites*; BARLOW (3) pp. 121, 122, 298.

(k) Vacant.

(l) Pre-Cambrian: see III, B, iv, a.

IV. SYSTEMATIC.

A. PORIFERA, GENERAL

The Porifera divided into three, possibly five classes, Calcarea, Hexactinellida, and Demospongiae, to which perhaps should be added, as groups equal to the foregoing in systematic value, the Octactinellida and Heteractinellida of Hinde; MINCHIN (47). Divided into four subclasses, Myxospongiae, Ceratospongiae, Silicispongiae and Calcispongiae; ZITTEL (82).

[The systematic lists which follow are classified according to the arrangement adopted by MINCHIN (47).]

B. CALCAREA.

Calcarea in general, classification and list of genera and families; MINCHIN (47) pp. 109–111. Calcispongiae, definition and characters; ZITTEL (82) pp. 62 & 63.

(i) HOMOCÆLA.

Diagnosis; MINCHIN (47) p. 110.

Family CLATHRINIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

Clathrina clathrus O. S., figured; MINCHIN (47), p. 6, fig. 7. *C. coriacea* (Mont.), distribution and description of the varieties of form and colour, and of the organization and development of the sponge; MINCHIN (46); young specimens figured; MINCHIN (47) p. 5, fig. 2. *C. depressa* (Dendy), from Funafuti, 25–45 fathoms; KIRKPATRICK (28) p. 349. *C. lacunosa* Johnst., figured; MINCHIN (47) p. 8. *C. primordialis* (H.); KIRKPATRICK (27) p. 129. *C. reticulum* (O. S.), figured; MINCHIN (47) p. 6, fig. 6.

[The following species of "Leucosolenia" belong to the family Clathrinidae as defined by MINCHIN (47).]

Leucosolenia cancellata Verrill, Strait of Belle Isle, 60 fathoms; Davis Strait, 60 fathoms; LAMBE (31) p. 27, pl. ii, figg. 5, 5a–c: general

distribution; LAMBE (32) p. 165. *L. pulcherrima* and *L. stipitata*; FIELDER (16) p. 69.

Family LEUCOSOLENIIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.
Leucosolenia complicata (Mont.), and *L. lieberkühnii* (O. S.), figured; MINCHIN (47) p. 5, figg. 3 & 4. *L. stolonifer*; FIELDER (16) p. 69.
L. variabilis (H.), figured; MINCHIN (47) p. 5, fig. 5.

(ii) HETEROCŒLA.

Diagnosis; MINCHIN (47) p. 110.

Family SYCETTIDÆ.

Diagnosis of family and list of genera; MINCHIN (47), p. 110. *Sycones*, definition and characters of order; ZITTEL (82) p. 65.
Sycon seu *Sycandra*, *S. asperum* Lambe and *S. compactum* Lambe, distribution; LAMBE (32) pp. 165 & 166. *S. eglintonensis*, n. sp., Davis Strait, 15 fathoms; LAMBE (31) pp. 29 & 30, pl. ii, figg. 6, 6a-e; LAMBE (32) p. 166. *S. gelatinosum*; FIELDER (16) p. 69. *S. mundulum*, n. sp., Davis Strait, 10 and 60 fathoms; LAMBE (31) pp. 28 & 29, pl. iii, figg. 7, 7a-e; LAMBE (32) p. 166. *S. protection* Lambe, redescribed, from Strait of Belle Isle, 60 fathoms, and west coast of Greenland; LAMBE (31) pp. 27 & 28, pl. i, figg. 4, 4a-j; LAMBE (32) p. 165: from Vancouver Island; LAMBE (29) p. 263. *S. raphanus*; FIELDER (16) p. 69: (*Sycandra*) *raphanus*, development from Ascon to Sycon stage; MAAS (39) pp. 228-236: observations on the ingestion of solid particles by the collar cells; ZEMLITSCHKA (81). *S. setosa* Lend., development of larva from fixation to Ascon stage; MAAS (39) pp. 218-228.

Family GRANTIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.
Grantia canadensis Lambe, and *G. comoxensis* Lambe, distribution; LAMBE (32) p. 166. *G. intricata*, n. sp., from Davis Strait, 60 fathoms; LAMBE (31) p. 32, pl. vi, figg. 14, 14a-f; LAMBE (32) p. 167. *G. monstruosa* Breitf., distribution; LAMBE (32) p. 166. *G. phillipi*, n. sp., from Davis Strait, 60 fathoms; LAMBE (31) pp. 30 & 31, pl. iv, figg. 9, 9a-i: LAMBE (32) p. 167.

Leucandro, sp.; KIRKPATRICK (27) p. 129. *L. aspera* H., figured; MINCHIN (47) p. 9, fig. 12. *L. cumberlandensis*, n. sp., from Cumberland Sound, 20 fathoms, and Davis Strait, 60 fathoms; LAMBE (31) pp. 34 & 35, pl. v, figg. 12, 12a-j: LAMBE (32) p. 167. *L. taylori*, n. sp., from Vancouver Island; LAMBE (29) pp. 261 & 262, pl. vi: LAMBE (32) p. 167. *L. valida*, n. sp., from Davis Strait, 10 fathoms; LAMBE (31) pp. 32 & 33, pl. iv, figg. 10, 10a-e, and pl. v, figg. 11, 11a-e: LAMBE (32) p. 167.

Leuconia pyriformis Lambe, distribution; LAMBE (32) p. 167.

Family HETEROPIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.
Heteropia rodgeri, n. sp., from Strait of Belle Isle, 60 fathoms; LAMBE (73/31) pp. 35 & 36, pl. vi, figg. 13, 13a-g: LAMBE (32) p. 168.
Hallieropsis macera; FIELDER (16) p. 69.

Family AMPHORISCIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 110.

Amphoriscus thompsoni, n. sp., from Strait of Belle Isle, 60 fathoms; LAMBE (31) pp. 36 & 37, pl. iii, figg. 8, 8a-j; LAMBE (32) p. 168.

Family PHARETRONIDÆ seu PHARETRONES.

Diagnosis of family *Pharetronidae*, with two families *Dialytinæ* and *Lithoninæ*, and list of genera; MINCHIN (47) p. 110: definition of order *Pharetrones*; ZITTEL (82) p. 63: structure of the skeleton from the point of view of their relations to *Astrosclera*; LISTER (38) pp. 473 & 479.

(1) *Dialytinæ* (= *Dialytina* Rauff), sense restricted to denote subfamily *Pharetronidae*, as opposed to *Lithoninæ*; MINCHIN (47) pp. 109 & 110: used in sense of Rauff, to denote a subclass of the Calcarea, opposed to *Lithonina*; TOPSENT (69) p. 148.

Corynella Z., genus defined, with figures of *C. quenstedti* Z., and its skeleton; ZITTEL (82) p. 64, and fig. 91; position of genus, and details of skeletal structure in *C. foraminosa*, *C. tetragona*, and *C. rugosa*; LISTER (38) pp. 476 & 477. *C. rugosa* Hinde and *C. socialis* Hinde; JUKES-BROWNE & HILL (25) p. 480.

Elasmostoma From., genus defined, with figure of *E. acutimargo* Roem.; ZITTEL (82) p. 64, fig. 95. *E.* sp.; ZÁHÁLEK (78) pp. 31, 92. *E. consobrinum* d'Orb., and *E. normannianum* d'Orb.; JUKES-BROWNE & HILL (25) pp. 68 & 480. *E. scitulum* Hinde; ROWE (55) p. 361.

Eudae Lamix, genus defined; ZITTEL (82) p. 63.

Eusiphonella Z., genus defined, with figures of *E. bronni* (Münst.); ZITTEL (82) p. 64, fig. 92.

†*Oculopongia tubifera* Goldf., figured; ZITTEL (82), p. 64, fig. 93.

†*Pachytildia* Z., genus defined; ZITTEL (82) p. 64. *P. infundibuliformis* Goldf.; JUKES-BROWNE & HILL (25) p. 480.

†*Peroniella* (seu *Peronella*) Z., genus defined, with figures of *P. cylindrica* Mnst. and *P. dumosa* From., includes *Siphonocelia* From. and *Polycaelia* From.; ZITTEL (82) p. 63, figg. 89 & 90. *P. furcata* Goldf.; JUKES-BROWNE & HILL (25) p. 480.

†*Pharetraspangia strahani* Soll., structure of skeleton; LISTER (38) p. 477: JUKES-BROWNE & HILL (25) p. 480: ROWE (55) p. 361.

Polycelia, vide etiam *Peroniella*.

†*Rhipidonema* Hinde, genus defined, with figure of *R. farringtonense* Sharpe; ZITTEL (82) p. 64, fig. 96.

Siphonocelia, vide etiam *Peroniella*.

†*Somphospongia* n. g. of Pharetrones, for *S. multiformis*, n. sp. from Kansas Coal Measures; BEEDE (4) pp. 128-130, pl. xxxiii, figg. 1-10.

†*Stellispangia* d'Orb., genus defined, with figure of *S. glomerata* Quenst.; ZITTEL (82) p. 64, fig. 94: position of genus; LISTER (38) p. 476. *S. variabilis*, skeletal characters described and compared with *Astrosclera*; LISTER (38) pp. 474 & 475.

†*Trema*(to)cystia *orbignyi* Hinde, p. 68 and p. 480; †*T. siphonoides* Mich., p. 480; JUKES-BROWNE & HILL (25).

(2) *Lithoninæ* (= *Lithonina* Rauff), placed as subfamily of *Pharetrones*; MINCHIN (47) p. 111: their relations to other Calcisponges, especially Pharetrones; HINDE (22).

†*Bactronella* Hinde, genus defined anew, and shown to belong to the Lithonina, intermediate between *Plectroninia* and *Petrostroma*; HINDE (22) p. 60. *B. australis*, n. sp., from Eocene rocks, Flinders, Victoria;

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- HINDE (22) p. 62, pl. iv, figg. 12-19. †*B. parvula*, n. sp., from Mount Martha or Mornington Beds (Eocene) near Melbourne; HINDE (22) pp. 60 & 61, pl. v.
- †*Holcospongia floriceps* Phill., possibly a Lithonine; HINDE (22) p. 58.
Petrosiroma Död., comparison with *Plectroninia*; HINDE (22) p. 57.
- Plectroninia*, n. g. of Lithonina, diagnosed, p. 58, with type species
 †*P. halli*, n. sp., from Eocene clays at Griffin's Farm, Moorabool river, N. W. of Geelong, and from Polyzoal Limestone of Eocene age, Flinders, Victoria; HINDE (22) pp. 51-57, pl. iii, figg. 1-83, pl. iv, figg. 1-11. *P. hindei*, n. sp., from Funafuti, 50 fathoms; KIRKPATRICK (28) pp. 347-350, pl. xiii, figg. 1, a-r.
- †*Porosphaera*, cretaceous genus generally regarded as a Hydrocoralline, in reality closely allied to *Lithonina*; HINDE (22) p. 57. *P.* sp.; JUKES-BROWNE & HILL (25) p. 480. *P. globularius*; ROWE (55) pp. 299, 304 & 361. *P. pileolus*; ROWE (55) pp. 304 & 361. *P. urceolata* Phil., JUKES-BROWNE & HILL (25) p. 480. *P. woodwardi*; ROWE (55) pp. 304 & 361.
- †*Sestrostomella rugosa* Hinde, possibly a Lithonine; HINDE (22) p. 58.
- †*Tretocalia*, n. g. of Pharetrones, possibly of Lithonina, for *T. perica*, n. sp., from Eocene limestone of Flinders, Victoria; HINDE (22) pp. 62 & 63, pl. iv, figg. 20-29.

Family ASTROSCLERIDÆ.

Astroscleridae, n. fam., defined; LISTER (38) p. 479.

Astrosclera, n. g. with type species *A. willeyana*, n. sp., from Sandal Bay, Lifu, Loyalty Islands, 33 fathoms, and from Funafuti, 100 fathoms; LISTER (38): description, reprinted from Lister, of the Funafuti specimen; KIRKPATRICK (28) pp. 346 & 347: MINCHIN (47) pp. 166-168.

HOMOCŒLA INCERTÆ SEDIS.

- †*Amblysiphonella* Steinm., the genus should perhaps be united with *Sebargasia*, p. 391: *A. prosseri*, n. sp., from Upper Carboniferous (Webaunsee Formation), Nehawka and Weeping Water, Nebraska, pp. 389 & 390, pl. xxiii; CLARKE (9).
- †*Barroisia*, characters of genus, with figures of *B. anastomans* Mant., and its skeleton: includes *Ventriculites* Z., non Defr. [? *Verticillites*] and *Sphaerocalia* Steinm.; should be placed amongst Sycons; ZITTEL (82) p. 65, fig. 97.
- Sebargasia*, vide etiam *Amblysiphonella*.
- Sphaerocalia*, vide etiam *Barroisia*.
- †*Sphinctozoa* as a separate order; LISTER (38) p. 476: name used apparently for a genus, to be placed amongst Sycons; ZITTEL (82) p. 65; cf. CLARKE (9).
- †*Thaumastocelia* Steinm., notes on structure; LISTER (38) pp. 476 & 478: placed amongst Sycons; ZITTEL (82) p. 65.
- † *Verticillites*, note on structure; LISTER (38) p. 476; vide etiam *Barroisia*.

C. HEXACTINELLIDA.

Hexactinellida in general, classification, with list of families and genera; MINCHIN (47) pp. 121-125: defined as order, structural features briefly described; ZITTEL (82) p. 54.

(i) LYSSACINA.

Diagnosis, as subclass, with two orders, *Hexasterophora* and *Amphidiscophora*; MINCHIN (47) p. 121: definition and characters, as suborder; ZITTEL (82) pp. 54 & 55.

Order HEXASTEROPHORA.

Diagnosis; MINCHIN (47) p. 121.

Family EUPLECTELLIDÆ.

Diagnosis of family, and of subfamilies *Euplectellina*, *Holascina*, and *Tegerinæ*, and list of genera; MINCHIN (47) pp. 121 & 122.

"*Alcyoncellum corbicula*" Bwk., correctly *Corbitella corbicula*: "*A. speciosum*" Quoy et Gaimard, correctly *Corbitella speciosa*; SCHULZE (64).

Corbitella Gray, 1867, has priority over *Habrodictyon* Wyville-Thomson, 1868: *C. speciosa* Quoy et Gaimard, and *C. corbicula* Bwk., history and synonymy of the species, the two species perhaps identical; SCHULZE (64).

Dictyaulus elegans F. E. S., from S.S.W. of Cape Comorin, 1316 metres, redescribed; SCHULZE (65) pp. 34 & 35.

Euplectella sp.; TAKESHITA (67a). *E. regalis*, n. sp., allied to *E. imperialis* Ijima, from Andamans, 741 meters depth; SCHULZE (65) pp. 24-30, pl. vi, figg. 1-9, diagnosis, p. 43.

Habrodictyon (-um) Wyville-Thomson, 1868, gives way to *Corbitella* Gray, 1867; SCHULZE (64).

Regudrella decora, n. sp., a species with "oxytetrasters" similar to those found in *R. okinoseana* Ijima, to which it is closely allied; from S.W. of Cape Comorin, 787 meters; SCHULZE (65) pp. 30-34, pl. vi, figg. 10-18, diagnosis, p. 43.

Family HERTWIGIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 122.

Family ASCONEMATIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 122.

Sympagella nux O. S., from Mediterranean, 414 and 444 meters; SCHULZE (61) pp. 3-7, pl. i, figg. 8-20.

Family ROSELLIDÆ.

Diagnosis of family, with sub-families *Leucopseacina*, *Lanuginellina*, *Rosellina* and *Acanthascina*, and list of genera; MINCHIN (47) p. 122.

Lophocalyx spinosa, n. sp., from W. of Andamans, 436-531 meters; SCHULZE (65) pp. 35-38, pl. vii, diagnosis, pp. 43 & 44.

Rhabdocalyptus davisoni Lambe, distribution; LAMBE (32) p. 165.

Schaudinnia, n. g. [nom. nud. (33) Zool Rec. 1899] of *Rosellidae*, sub-fam.

Rosellina for *S. arctica*, n. sp., [nom. nud. 1899 l. c.] from Arctic Ocean, 1000 meters; SCHULZE (63) pp. 87-100, pl. i, figg. 1-6, pls. ii & iii, diagnosis, p. 107.

Scyphidium, n. g. [nom. nud. (33) Zool. Rec. 1899] of *Rosellidae*, sub-fam.

Rosellina, for *S. septentrionale*, n. sp., [nom. nud. 1899, l. c.] from Arctic Ocean, 1000 meters; SCHULZE (63) pp. 104-107, pl. iv, figg. 11-17, diagnosis, p. 108.

Stauropolyptus dowlingii Lambe, distribution. 1-11 101-106.

Trichasterina, n. g. [nom. nud. (33) Z-

fam. *Rossellinæ* for *T. borealis*, n. sp. [nom. nud. 1899, l. c.], from Arctic Ocean, 1000 meters; SCHULZE (63) pp. 100–104, pl. i, figg. 7, 8, 9, pl. iv, figg. 1–10, diagnosis, pp. 107 & 108.

Order AMPHIDISCOPHORA.

Diagnosis; MINCHIN (47) p. 122.

Family HYALONEMATIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 123.

Hyalonema lamella, n. sp., described from fragments of not absolutely certain systematic position, dredged S.W. of Cape Comorin, at 787 and 1530 meters, pp. 15–19, pl. iii, diagnosis, p. 42.: *H. martabanense*, n. sp., from Bay of Martaban, 1171 meters, pp. 12–15, pl. ii, diagnosis, p. 41: *H. masoni*, F. E. S., from Andamans, 911 meters, redescribed, p. 8: *H. rapa*, n. sp., from Bay of Bengal, 1109 meters, pp. 9–11, pl. i, diagnosis, p. 41; SCHULZE (65).

Lophophysema n. g. of *Hyalonematidæ* for type *L. inflatum*, n. sp., from W. of Andamans, 911 meters; SCHULZE (65) pp. 19–23, pls. iv & v, diagnosis, pp. 42 & 43.

Pheronema raphanus F. E. S., fully described, from Andamans, 316–531 meters; SCHULZE (65) pp. 4–7, 2 figg.: figured by CHUN (8) p. 477.

Polypogon gigas; MACMUNN (45) pp. 342–344.

†*Pyrionema*, genus defined; ZITTEL (82) p. 55.

“*Semperella*, n. sp.”, figured; CHUN (8) pp. 478 & 479.

Extinct Families of LYSSACINA.

Family PROTOSPONGIDÆ.

Family defined; ZITTEL (82) p. 55: list of genera; MINCHIN (47) p. 123.

†*Protospongia*, sp.; PEACH & HORNE (50) pp. 668, 708. †*P. rhenana* Schliüt., is a Dictyosponge of uncertain position; HALL & CLARKE (20) p. 68.

Family DICTYOSPONGIDÆ.

Definition of the family, p. 29; structure, pp. 29–41; affinities, pp. 22–29; bibliography, pp. 41–51; classification, with seven sub-families, pp. 52 & 53; synoptic list of genera and species, pp. 54–57; distribution, pp. 58–62; [the generic name *Dictyophyton* Hall 1863, is abolished on the ground that it was given under the erroneous supposition that these organisms were plants; the species of *Dictyophyton* are scattered amongst various genera new and old, the type sp. *D. newberryi* Hall, being placed under *Thamnodictya* Hall; see also HINDE in review]: HALL & CLARKE (20): family defined; ZITTEL (82) p. 55.

(i) *Dictyosponginae*, n. sub-fam. for genera *Dictyospongia*, (?) *Lysactinella*, *Hydriodictya*, *Prismodictya*, *Gongylospongia*, *Hydroceras*, (?) *Tylodictya*, *Helicodictya*, *Rhabdospongia*, *Ceratodictya*, *Clathrospongia*, *Lebedictya*, *Lyrodictya*, (?) *Mustodictya*, and *Botryodictya*, defined; HALL & CLARKE (20) p. 52.

†*Botryodictya* n. g. for *Dictyophyton ramosum* Lesquereux, defined, p. 111; *B.* (or *Tylodictya*) sp. [sic], p. 114; *B. ramosa* Lesq., pp. 111–114, pl. xiii, figg. 1–8; both from Devonian, New York; HALL & CLARKE (20).

[†]*Ceratodictya*, n. g., defined, p. 117; type species *C. annulata* (*Dictyophyton annulatum* Hall), Devonian, N. America, redescribed, p. 120, pl. xxii, figg. 3-6; *C. centeta*, n. sp., Devonian, New York, pp. 120 & 121, pl. xli, figg. 1-5; *C. carpenteriana*, n. sp., Devonian, N. America, pp. 117 & 118, pl. xlvi, fig. 1, pl. xliii, figg. 1-3; *C. cincta* Hall, redescribed, Devonian, Pennsylvania, pp. 118 & 119, pl. xxii, figg. 7-9; *C. zonata*, n. sp., Devonian, Pennsylvania, p. 119, pl. xli, fig. 6; HALL & CLARKE (20).

[†]*Ceratodictya annulata* Hall; WHITFIELD & HOVEY (76) p. 190.

[†]*Clathrospongia* Hall; genus defined, pp. 121 & 122; type species *C. abucus* Hall, Carboniferous, Pennsylvania, redescribed, p. 153, pl. xlvi, figg. 5-8; *C. caprodonata*, n. sp., Carboniferous, Ohio, p. 154, pl. 1, figg. 8 & 9; *C. (?) desmia*, n. sp., Devonian, New York, p. 125, pl. xxv, fig. 3; *C. fenestrata* Hall, Devonian, New York, redescribed, pp. 122 & 123, pl. xiv, fig. 2, pl. xxv, fig. 5; *C. (?) hamiltonensis* Hall, from Hamilton Shales, Canandaigua Lake, New York, redescribed, pp. 66 & 67, pl. xiv, fig. 1; *C. (?) irregularis* Hall, from Devonian, New York, redescribed, pp. 124 & 125, pl. xv, figg. 6 & 7; *C. (?) tomaculum* Hall, Devonian, New York, redescribed, pp. 123 & 124, pl. xviii, figg. 5 & 6, pl. xxi, fig. 11; *C. vascellum* Hall, Devonian, New York, redescribed, p. 123, pl. xxi, fig. 12, pl. xxv, fig. 4; HALL & CLARKE (20).

[†]*Clathrospongia fenestrata* Hall; WHITFIELD & HOVEY (76) p. 190.

[†]*Dictyospongia*, n. g., defined with type species *D. sceptrum*, p. 72; *D. almonensis*, n. sp., from Chemung Group, Devonian, New York, pp. 76 & 77, pl. xliv, fig. 1, text-fig. 13; *D. (?) bacteria*, n. sp., from Chemung Group, Devonian, N. America, p. 77, pl. xxxviii, figg. 7 & 8; *D. charita*, n. sp., from Chemung Group, Devonian, New York, pp. 74 & 75, pl. xv, fig. 4; *D. cylindrica* Whitfield, Carboniferous, Indiana, redescribed, p. 166, pl. lv, fig. 3, pl. lxi, fig. 6, text-fig. 22; *D. danbyi* (McCoy), from Silurian, redescribed, pp. 63 & 64, text-fig. 10; *D. eumorpha*, n. sp., from Chemung Group, Devonian, New York, p. 75, pl. xv, figg. 1-3; *D. haplea*, n. sp., Portage Sandstones, New York (Devonian), p. 68, pl. xxxiii, fig. 1; *D. lophiura*, n. sp., from Chemung Group, Devonian, New York, p. 74, pl. xv, fig. 5; *D. marcella* Clarke, from horizon of Marcellus Shales, Hamilton Group, Livonia, New York, redescribed, pp. 63 & 66, pl. xli, figg. 8 & 9, text-fig. 11; *D. morini* Barrois, Devonian, Brittany, redescribed, p. 147, pl. xxvi, figg. 1 & 2; *D. (Mastodictya) osculata*, n. sp., Carboniferous, Indiana, pp. 167 & 168, pl. lvi, fig. 6, text-fig. 22; *D. sceptrum* Hall, from Chemung Group, Devonian, North America, redescribed, pp. 73 & 74, pl. xiv, figg. 3-6, pl. xv, figg. 8 & 9, pl. xvi, figg. 3 & 4, pl. xxvii, fig. 3, pl. xxxvi, fig. 7; *D. stacea*, n. sp., from Chemung Group, Devonian, New York, pp. 75 & 76, pl. xlii, figg. 4 & 5; *D. stylina*, n. sp., Carboniferous, Indiana, p. 167, pl. lvi, fig. 2; HALL & CLARKE (20).

[†]*Gongylosporia*, n. g., defined, for type species *G. marshi*, n. sp., from Devonian, New York; HALL & CLARKE (20) pp. 92-95, text-fig. 14-17.

[†]*Helicodictya*, n. g., defined, for type species *H. trypania*, p. 114; *H. (?) concordia*, n. sp., pp. 115 & 116, pl. xxvii, fig. 2; *H. (?) scio*, n. sp., p. 116, pl. xxvii, fig. 1; *H. trypania*, n. sp., pp. 114 & 115, pl. xxii, figg. 1 & 2; all from Devonian, New York; HALL & CLARKE (20).

[†]*Hydroceras* Conrad, defined, for type species *H. tuberosum* Conrad, p. 96; *H. sp.*, Devonian, New York, p. 111, pl. viii, fig. 3; *H. anthracis*, n. sp., Devonian, New York, pp. 109 & 110, pl. ii, fig. 8, pl. vi, figg. 1 & 2, pl. xxxiii, figg. 8 & 9; *H. avoca*, n. sp., Devonian, New York, pp. 103 & 104, pl. ii, figg. 1, 3, pl. ix, fig. 3, pl. x, fig. 1, pl. xi, fig. 1; *H. barroisi*, nom. nov. for *Dictyophyton tuberosum* Barrois, Devonian, Brittany, redescribed, pp. 147 & 148, pl. xlvi, figg. 3 & 4; *H. bathense*, n. sp., from Devonian, New " " & 102, pl. "

- fig. 3, pl. viii, fig. 4, pl. ix, fig. 1; *H. botaedema*, n. sp., Devonian, New York, pp. 102 & 103, pl. ii, fig. 4; *H. eumeces*, n. sp., Devonian, New York, pp. 110 & 111, pl. xii, figg. 1-3; *H. euthelos*, n. sp., from Portage and Chemung Groups, Devonian, N. America, p. 70 and pp. 105 & 106, pl. viii, figg. 5 & 6, and pl. xxxiii, fig. 7; *H. gracile*, n. sp., from Portage Sandstone, New York, pp. 70 & 71, pl. xxxiii, figg. 3 & 4; *H. hypastrum*, n. sp., Devonian, New York, p. 105, pl. vii, fig. 1; *H. jaumontense*, n. sp., Devonian, Brittany, pp. 148 & 149, pl. xlvi, figg. 5 & 6; *H. legatum*, n. sp., from Portage Group, N. America, pp. 69 & 70, pl. xxxiii, figg. 5 & 6; *H. lutheri*, n. sp., Devonian, New York, pp. 107 & 108, pl. viii, figg. 7-10; *H. multinodosum*, n. sp., Devonian, New York, p. 106, pl. xxxix, fig. 1; *H. nodosum* Hall, from Devonian, New York, p. 109, pl. ii, fig. 2; *H. phymatoides*, n. sp., Devonian, New York, pp. 104 & 105, pl. vi, figg. 4 & 5, pl. xxxvii, fig. 3; *H. rhopalum*, n. sp., Devonian, New York, pp. 107 & 108, pl. xxxvii, figg. 1 & 2; *H. tuberosum* Conrad, from Devonian, redescribed, pp. 97-101, pl. ii, figg. 5-7, pl. iii, figg. 1, 2, 4, pl. iv, figg. 2-4, pl. v, figg. 3 & 4, pl. vi, fig. 3, pl. vii, figg. 2 & 3, pl. viii, figg. 1 & 2, pl. xxxviii, figg. 1 & 2; *H. tuberosum*, var. *glossema*, n. var., p. 101, pl. vii, figg. 4 & 5, pl. ix, fig. 2; *H. variabile*, n. sp., Devonian, New York, pp. 108 & 109, pl. xxxvi, fig. 1, pl. xxxvii, figg. 4-6: HALL & CLARKE (20).
 +*Hydroceras nodosum* Hall, and +*H. tuberosum* Conrad; WHITFIELD & HOVEY (76) p. 192.
 +*Hydriodictya*, n. g., defined, with type species *Dictyophyton patulum* Hall, p. 77; *H. cylrix*, n. sp., pp. 78 & 79, pl. v, figg. 1 & 2, pl. xvi, fig. 2, pl. lv, fig. 7; *H. nephelia*, n. sp., p. 79, pl. xxi, fig. 10; *H. patula* Hall, redescribed, p. 78, pl. iv, fig. 1; all from Chemung Group, Devonian, New York: HALL & CLARKE (20).
 +*Lebedictya*, n. g., defined, p. 169; type species *L. crinita*, n. sp., Carboniferous, Indiana, pp. 169 & 170, pl. lviii, figg. 1 & 2, pl. lix, figg. 1 & 2, pl. lxi, fig. 5; HALL & CLARKE (20).
 +*Lyrodictya* Hall, genus defined, type *L. romingeri*, p. 170; *L. (?) burlingtonensis* Hall, Carboniferous, Iowa, redescribed, pp. 165 & 166, pl. liii, fig. 6; *L. romingeri* Hall, Carboniferous, Indiana, redescribed, pp. 170-172, pl. lvi, fig. 1, text-fig. 25: HALL & CLARKE (20).
 +*Lysactinella gebardi* Girty and +*L. perelegans* Girty from Devonian; HALL & CLARKE (20) pp. 64 & 65; SCHUCHERT (58) p. 278.
 +*Mustodictya*, n. g., suggested for *Dictyospongia oculata*, q.v.; HALL & CLARKE (20), pp. 167 & 310.
 +*Primodictya*, n. g., defined, for type species *Dictyophyton telum* Hall, p. 79; *P. alleganius*, n. sp., pp. 84 & 85, pl. xx, fig. 4; *P. amicitiae*, n. sp., pp. 87 & 88, pl. xxxvi, figg. 2-4; *P. andophia*, n. sp., p. 88, pl. xx, figg. 7 & 8, pl. xxxiv, figg. 4 & 5, pl. xli, fig. 7; *P. baculum* Hall, redescribed, pp. 81 & 82, pl. xviii, figg. 1-3; *P. banano*, n. sp., p. 87, pl. xvii, fig. 2; *P. cercidea* n. sp., p. 89, pl. xx, figg. 1-3, pl. xlvi, fig. 3; *P. choanea*, n. sp., p. 85, pl. xix, figg. 1-3, pl. xviii, fig. 5, pl. xxxv, fig. 6; *P. cithara*, n. sp., p. 90, pl. xxxv, figg. 1-3, pl. xxxvi, fig. 5; *P. conradi* Hall, redescribed, pp. 91 & 92, pl. xviii, fig. 4, pl. xix, figg. 5 & 6; *P. cornuta*, n. sp., p. 86, pl. xvii, fig. 11; *P. filitextilis* Hall, redescribed, pp. 86 & 87, pl. xxi, fig. 7, pl. xxvii, fig. 4; *P. narthercia*, n. sp., p. 90, pl. xxxv, figg. 4 & 5; *P. palaea*, n. sp., p. 69, pl. xxxiii, fig. 2; *P. parallela* Hall, redescribed, pp. 82 & 83, pl. xix, fig. 4, pl. xx, fig. 6, pl. xxi, figg. 8 & 9, pl. xxxv, fig. 9; *P. polyhedra*, n. sp., pp. 168 & 169, pl. lv, figg. 1 & 2; *P. prismaticus* Hall, redescribed, pp. 83 & 84, pl. xvii, fig. 1, pl. xxi, figg. 1-6, pl. xlvi, fig. 6; *P. ptionia*, n. sp., pp. 88 & 89, pl. xxxiv, fig. 3; *P. spectabilis*, n. sp., p. 82, pl. xx, fig. 5; *P. telum* Hall, p. 80, pl. xvii, figg. 3-10, pl. xxxv, figg. 7 & 8, pl. xlvi, fig. 2; all from Devonian, N. America: HALL & CLARKE (20).

[†]*P. filitextilis* Hall and [†]*P. parallela* Hall; WHITFIELD & HOVEY (76) p. 192.

[†]*Rhabdosiopongia*, n. g., defined, p. 116; type species *R. (Dictyophyton) amalthea* Hall, redescribed, from Devonian, Pennsylvania, pp. 116, pl. xvi, fig. 1; *R. condroiana*, n. sp., from Devonian, Brittany, pp. 149 & 150, pl. xlvi, figg. 1 & 2: HALL & CLARKE (20).

[†]*Tylodictya*, n. g. defined, with type species *P. warrenensis*, p. 151; *T. (?) tenuis* Hall, pp. 152 & 153, pl. liii, figg. 4 & 5; *T. warrenensis*, n. sp., pp. 151 & 152, text-figg. 18-20; both from Carboniferous, Waverley Sandstone, Pennsylvania: HALL & CLARKE (20).

(ii) *Thysanodictyinae*, n. sub-fam. for genera *Thysanodictya*, *Arystidictya*, *Phragmodictya*, (?) *Griphodictya*, and *Achlaodictya*, defined; HALL & CLARKE (20) p. 52.

[†]*Achlaodictya*, n. g., defined, with type *A. marsipus*, p. 177; *A. (?) eccentrica* Hall, p. 179, pl. liv, figg. 1 & 2; *A. marsipus*, n. sp., pp. 178 & 179, pl. lv, figg. 4 & 5, pl. ix, figg. 3-5, pl. lxi, figg. 1-3, pl. lxviii, figg. 7 & 8, text-figg. 31 & 32; both from Carboniferous, Indiana: HALL & CLARKE (20).

[†]*Arystidictya*, n. g., defined, p. 136; type species *A. elegans*, n. sp., pp. 136 & 137, pl. xli, fig. 10, pl. xlii, fig. 7; *A. nodifera*, n. sp., p. 137, pl. xli, fig. 11; both from Devonian (Chemung Group), New York: HALL & CLARKE (20).

[†]*Griphodictya*, n. g., defined, with type species *G. epiphanes*, n. sp., Carboniferous, Indiana; HALL & CLARKE (20) pp. 179-181, pl. lv, fig. 6, text-fig. 63.

[†]*Phragmodictya* Hall, defined, p. 172; type species, *P. catilliformis* Whitfield, pp. 173-176, pl. lxiv, figg. 1-5, pl. lxv, figg. 1 & 2, pl. lxvi, figg. 1-9, pl. lxvii, figg. 1-4, pl. lxviii, figg. 1-4, text-figg. 26-30; *P. (?) crebristriata* Hall, p. 176, pl. lxi, fig. 4; *P. (?) lineata* Hall, pp. 176 & 177, pl. lxviii, fig. 5; *P. patelliformis* Hall, p. 176, pl. lxv, fig. 3; all from Carboniferous, Indiana: HALL & CLARKE (20).

[†]*Thysanodictya*, n. g., defined, with type species *Dictyophyton halli* Hall, p. 125; *T. apelta*, n. sp., Devonian, N. America, p. 135, pl. xxvi, fig. 1, pl. xxvii, fig. 8; *T. edwin-halli*, nom. nov. for *Dictyophyton halli* Hall, Devonian, New York, redescribed, pp. 126 & 127, pl. xxiv, figg. 1-9; *T. expansa* Hall, Devonian, Pennsylvania, redescribed, pp. 154 & 155, pl. lxxi, fig. 3; *T. hermenia*, n. sp., Devonian, New York, pp. 133 & 134, pl. xxvii, fig. 7, pl. xxix, fig. 2, pl. xl, figg. 1-3; *T. johnstoni*, n. sp., Devonian, New York, pp. 130 & 131, pl. xxiii, figg. 7 & 8; *T. poecilus*, n. sp., Devonian, New York, pp. 127 & 128, pl. xxiv, figg. 10 & 11; *T. quasillum*, n. sp., Devonian, N. America, pp. 131 & 132, pl. xxxviii, figg. 3 & 4; *T. randalli* Hall, Devonian, Pennsylvania, redescribed, pp. 129 & 130, pl. xxiv, fig. 12; *T. rufa* Hall, Devonian, N. America, redescribed, pp. 128 & 129, pl. xix, fig. 7, pl. xxiii, figg. 1-6; *T. saccus*, n. sp., Devonian, New York, p. 130, pl. xxv, figg. 1 & 2; *T. scyphina*, n. sp., Devonian, New York, p. 132, pl. xlvi, fig. 8; *T. turricula*, n. sp., Devonian, New York, pp. 135 & 136, pl. xxxviii, figg. 5 & 6: HALL & CLARKE (20).

(iii) *Calathosponginae*, n. sub-fam. for genera *Calathospongia*, *Thamnodictya*, *Clepsydrospongia*, and *Cleodictya*, defined; HALL & CLARKE (20) p. 53.

[†]*Calathospongia*, n. g., defined, type species *Dictyophyton redfieldi* Hall, p. 155; *C. amphorina*, n. sp., Carboniferous, Indiana, p. 182, pl. lxviii, fig. 6; *C. carceralis*, n. sp., Carboniferous, Ohio and Indiana, p. 157, pl. li, figg. 2-4, pl. lxi, figg. 2 & 3. pl. lx. figs. 1 & 2: *C. carlli*, n. sp.. Carboniferous, Pennsylvania, ^{figs. 4-7. ^{text}}

- 21; *C. magnifica*, n. sp., Carboniferous, Indiana, pp. 182 & 183, pl. lvi, fig. 5, pl. lvii, fig. 1; *C. redfieldi* Hall, Carboniferous, Ohio and Pennsylvania, pp. 155 & 156, pl. xlvi, figg. 1 & 2, pl. lix, figg. 1-4; *C. (?) succulus* Hall, Carboniferous, Ohio, redescribed, p. 160, pl. l, fig. 7; *C. tiffanyi*, n. sp., Carboniferous, Ohio, pp. 158-160, pl. li, figg. 5 & 6: HALL & CLARKE (20).
- +*Cleodictya* Hall, defined, with type *C. gloriosa*, p. 163; *C. claypolei*, n. sp., Carboniferous, Ohio, p. 163, pl. li, fig. 1; *C. gloriosa* Hall, Carboniferous, Indiana, redescribed, pp. 183 & 184, pl. lxix, fig. 1, pl. lxx, figg. 1 & 2; *C. mohri* Hall, Carboniferous, Indiana, redescribed, pp. 184-187, pl. lxx, fig. 3, text-figg. 34-37: HALL & CLARKE (20).
- +*Clepsydrospongia*, n. g. for type species *C. matutina*, n. sp. from Portage Sandstones, Devonian, New York; HALL & CLARKE (20) pp. 71 & 72, pl. xxxiv, figg. 1 & 2.
- +*Thamnodictya* Hall, defined, pp. 160 & 161; type species *T. (Dictyophyton) newberryi* Hall, pp. 161 & 162, pl. l, figg. 1-6, pl. lii, fig. 1; *T. ortonii*, n. sp., pp. 162 & 163, pl. liii, figg. 1 & 2; both from Carboniferous, Ohio; HALL & CLARKE (20).
- (iv) *Physospongiinae*, n. sub-fam. for genera *Physospongia* and *Roeimerispongia*, defined; HALL & CLARKE (20) p. 53.
- +*Physospongia* Hall, defined, pp. 187-189; *P. alternata* Hall, redescribed, p. 195, pl. lxii, fig. 11; *P. colletti* Hall, redescribed, pp. 193-195, pl. lxiii, figg. 1-7, text-figg. 43 & 44; *P. dawsoni* Whitfield, pp. 189-193, pl. lxii, figg. 1-10, text-figg. 38-42; *P. multibursaria*, n. sp., pp. 196 & 197, pl. lxi, fig. 7, text-fig. 45; all from Carboniferous, Indiana: HALL & CLARKE (20).
- +*Roeimerispongia*, n. g., defined, with genotype *R. (Dictyophyton) gerolsteinensis* Roemer; HALL & CLARKE (20) p. 67, text-fig. 12.
- (v) *Hyphanteninae*, n. sub-fam. for genus *Hyphantenia*, defined; HALL & CLARKE (20) p. 53.
- +*Hyphantenia*, nom. nov. for *Uphantenia* Vanuxem, defined, pp. 137-139; type species *H. chemungensis* Van., Devonian, New York, redescribed, pp. 139 & 140, pl. xxviii, figg. 1 & 2, pl. xxix, fig. 1, pl. xl, fig. 1; HALL & CLARKE (20).
- (vi) *Halldictyinae*, n. sub-fam. for genera *Halldictya*, *Actinodictya* and *Cryptodictya*, defined; HALL & CLARKE (20) p. 53.
- +*Actinodictya* Hall, defined, pp. 142 & 143; type species *A. placentia* Hall, Devonian, New York, redescribed, p. 143, pl. xxx, figg. 1-3, pl. xxxi, figg. 1 & 2; HALL & CLARKE (20).
- +*Cryptodictya* Hall, defined, for type species *C. allenii* Hall, Devonian, New York, redescribed; HALL & CLARKE (20) pp. 144 & 145, pl. xxxi, figg. 3-5, pl. xxxii, figg. 1-4.
- +*Halldictya*, n. g. defined, with type species *H. sciensis*, p. 140; *H. cottoniana*, n. sp., Devonian, New York, p. 142, pl. xli, fig. 12; *H. sciensis*, n. sp., Devonian, Allegany County, pp. 140 & 141, pl. xxxvi, fig. 8; HALL & CLARKE (20).
- (vii) *Aglithodictyinae*, n. sub-fam. for genus *Aglithodictya*, defined; HALL & CLARKE (20) p. 53.
- +*Aglithodictya*, n. g. defined, with type species *A. nummulina*, n. sp., Devonian, Pennsylvania; HALL & CLARKE (20) pp. 145 & 146, pl. xxv, figg. 6-9.

DICTYOSPONGIDÆ INCERTÆ SEDIS.

[†]*Dictyophyton*, sp.; WELLER (73) p. 69.

[†]*Ectenodictya* Hall, defined, p. 164; type species *E. implexa* Hall, Carboniferous, Ohio, redescribed, pp. 164 & 165, pl. liv, fig. 3 & 4; HALL & CLARKE (20).

Family PLECTOSPONGIDÆ.

List of genera; MINCHIN (47) p. 123: family defined; ZITTEL (82) p. 55.

[†]*Cyathodictya*, nom. nov. for *Cyathophycus*, p. 24 footnote, and p. 200; *C. reticulata* Walcott, from Utica Slate, New York, p. 24 footnote, and p. 200, pl. i, figg. 1-6: HALL & CLARKE (20).

[†]*Cyathophycus*, vide etiam *Cyathodictya* and *Sphaerodictya*.

[†]*Plectoderma scitulum* Hinde; PEACH & HORNE (50) p. 708.

[†]*Sphaerodictya*, nom. nov. for *Cyathophycus* seu *Teganium*; *S. subsphaerica* Walcott, Utica Slate, New York; HALL & CLARKE (20), p. 26 footnote, and p. 20, pl. i, figg. 14-22.

[†]*Teganium* Rauff, genus not accepted; HALL & CLARKE (20) p. 25 footnote.

Family BRACHIOSPONGIDÆ.

Brachiospongia Marsh, genus defined; ZITTEL (82) p. 55.

Family PATTERSONIDÆ.

Pattersonia Miller, genus defined; ZITTEL (82) p. 55.

Family RECEPTACULITIDÆ.

[†]*Iochadites*, sp., and [†]*I. antiquus* Salt.; PEACH & HORNE (50) pp. 668 & 686. [†]*I. iowensis* Owen; SCHUCHERT (59) p. 153. [†]*I. kosugi* Murch; PEACH & HORNE (50) pp. 668, 686, 708. [†]*I. squamifer* Hall; SCHUCHERT (58) p. 278.

[†]*Receptaculites*, n. sp., from Helderbergian Fauna, New York; SCHUCHERT (58) p. 275. [†]*R.*, sp. [placed under Protozoa]; BURHENNE (6) p. 44. [†]*R. arcticus* Eth., compared with [†]*R. oweni*; SCHUCHERT (59) p. 253. [†]*R. australis* Salter, structure and localities; ETHERIDGE & DUN (14). [†]*R. devonicus* Whit.; BOWNOCKER (5) p. 20. [†]*R. infundibuliformis* Eaton; SCHUCHERT (58) p. 278. [†]*R. occidentalis* Salt. [classed amongst Protozoa]; BARLOW (3) pp. 122 & 298. [†]*R. oweni* Roem., from Lower Silurian of Baffin Land, described; SCHUCHERT (59) pp. 152 & 153. [†]*R. pearyi*, n. sp., from Cape Harrison, Princess Marie Bay, Niagara(?) Group; WHITFIELD (75) pp. 19 & 20, pl. i, fig. 1: WHITFIELD & HOVEY (76) p. 350.

Family AMPHISPONGIDÆ.

Amphispongia oblonga Salt., Silurian of Scotland; PEACH & HORNE (50) pp. 668 & 708.

Family POLLAKIDÆ.

[†]*Hyalostelia* Z., genus defined; ZITTEL (82) p. 55. *H.* sp. and *H. (Hyalonema) fascicularis* McCoy; PEACH & HORNE (50) p. 668.

[†]*Spiractinella wrightii* Crtr., spicules ^{ZITTEL (82) p. 56, fig. 69.}

(ii) *DICTYONINA.*

Diagnosis, as sub-class, with orders *Uncinataria* and *Inermia*; MINCHIN (47) p. 123: definition and characters, as sub-order; ZITTEL (82) pp. 56 & 57.

Order UNCINATARIA

Diagnosis; MINCHIN (47) p. 123.

Sub-order CLAVULARIA.

Diagnosis; MINCHIN (47) p. 123.

Family FARREIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 123.

Farrea occa Bwk., from Andamans, 238–458 meters, and from S.W. of Cape Comorin, 787 meters; SCHULZE (65) p. 38.

Sub-order SCOPULARIA.

Diagnosis; MINCHIN (47), p. 123.

Family EURETIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124.

†*Sporadopyle* Z., genus defined; ZITTEL (82) p. 57.

†*Tremadictyon* Z., genus defined; *T. reticulatum* Goldf., figures of sponge and skeleton; ZITTEL (82) p. 57, fig. 73.

†*Verrucocalia tubulata* T. Smith; ROWE (55) p. 360.

Family CRATICULARIDÆ.

Family defined; ZITTEL (82) p. 57.

†*Craticularia*, genus defined, with figures of *C. paradoxa* Mnstr., and its skeleton; ZITTEL (82) p. 57, fig. 74. *C.* sp.; ZAHÁLKA (78) pp. 31 & 92. *C. fittoni*; ROWE (55) pp. 317 & 360. *C. subseriata* Roem.; ZAHÁLKA (79) pp. 35, 43–49. *C. vulgata* Poč.; ZAHÁLKA (78) p. 92.

Family MELLITTIONIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124.

Aphrocallistes sp., figured; CHUN (8) p. 475. *A. beatrix* Gray, from Andamans, 362 meters and 434–541 meters, pp. 38 & 39; *A. bocagei* E. P. Wright, from Andamans and S.W. of Cape Comorin, 165–787 meters, pp. 39–41; SCHULZE (65). *A. vastus* F. E. S., from Arctic Seas, 565, 640 & 642 meters; SCHULZE (63) p. 108. *A. whiteavesianus* Lambe, distribution; LAMBE (32) p. 165.

Family COSCINOPORIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124: family defined; ZITTEL (82) p. 57.

Chonelasma calyx F. E. S., from Arctic Seas, 1053 meters; SCHULZE (63) p. 108.

Coscinopora Goldf., genus defined; ZITTEL (82) p. 58. †*C.* sp., Cambro-Silurian; BARLOW (3) p. 121. †*C. infundibuliformis* Goldf.; ROWE (55) p. 360: figures of sponge and skeletal elements; ZITTEL (82)

- p. 58, fig. 75. †*C. macropora* Eaton; the type specimen is a specimen of *Polypora distans*, a Polyzoan; WHITFIELD & HOVEY (76) pp. 190 & 200.
 †*Guettardia stellata* Mich.; ROWE (55) pp. 317 & 360: ZAHÁLKA (79) p. 35. †*G. trilobata*; ZAHÁLKA (79) pp. 13 & 35.
 †*Lepiophragma*, genus defined; ZITTEL (82) p. 58. *L. fragilis*; ZAHÁLKA (79) pp. 13, 35, 44. *L. murchisoni* Goldf.; ROWE (55) p. 36.
 †*Pleurostoma bohemicum* Z.; ZAHÁLKA (78) pp. 51, 62, 92, 100, 102: ZAHÁLKA (79) pp. 15, 25, 27, 29, 35. †*P. scyphus*; ZAHÁLKA (79) pp. 17 & 35: ŽELÍZKO (80) p. 16.

Family TRETOGLOSSIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124.

Hexactinella? sp.?; macerated fragments of a dictyonine sponge, from the Island of Galli, near Amalfi; SCHULZE (61) pp. 2 & 3, pl. i, figg. 1-7. *H. grimaldii* Tops., figured; RICHARD (51) pl. ix, figg. 1 & 2.

SCOPULARIA INCERTÆ SEDIS.

Tretocalyx, n. g. for *T. polæ*, n. sp., from Red Sea, 341-820 meters, a sponge belonging to the group Scopularia, but its family position uncertain for the present; SCHULZE (62) pp. 9-13, pl. iii.

Order INERMIA.

Diagnosis; MINCHIN (47) p. 124.

Family MÆANDROSPONGIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 124: definition of family; ZITTEL (82) p. 61.

Aulocystis grayi Bwk., Schulze, from Red Sea, 490-868 meters, pp. 1-9, pls. i & ii; *A. zittelii* Marah & Meyer, type and other specimens re-described, pp. 5-8, pl. ii: SCHULZE (62).

†*Beckisia* Schlüt., genus defined, with figures of *B. sokelandi* Schlüt., and its skeleton; ZITTEL (82) p. 61, fig. 82.

†*Camerospongia* d'Orb., genus defined, with figure of *C. fungiformis* Goldf.; ZITTEL (82) p. 61, fig. 83. *C. aperta* Hinde; *C. capitata* T. Smith; *C. subrotunda* Mant.: ROWE (55) p. 361. *C. monostoma* Roem.; ZAHÁLKA (79) pp. 10 & 36.

†*Cyrtobolia formosa* Rss.; ZAHÁLKA (79) pp. 10 & 11. †*C. morchella* Rss.; ZAHÁLKA (79) p. 10.

†*Cystispongia* Roem., genus defined, with figure of *C. bursa* Quenst., and its skeleton; ZITTEL (82) p. 61, fig. 84. *C. verrucosa* Rss.; ZAHÁLKA (79), pp. 10, 15, 27, 29, 36.

†*Plococypphia* Rss., genus defined, with figure of *P. pertusa* Gein., and its skeletal elements; ZITTEL (82) p. 61, fig. 81. *P. convoluta* T. Smith; ROWE (55) p. 361. *P. labrosa* T. Smith; JUKES-BROWNE & HILL (25) p. 481: ROWE (55) p. 361: ZAHÁLKA (79) p. 10. *P. labyrinthica* Rss.; ZAHÁLKA (79) pp. 25 & 36.

†*Pyrospongia*, n. g. of Mæandrospongidae allied to *Plococypphia*, p. 37, for *P. vrbaei*, n. sp., pp. 37-40, figg. 70-80, also pp. 10, 11, 15, 19, 29, 36; *P. čížkovicensis*, n. sp., pp. 40 & 41, figg. 83-85, also pp. 10 & 36; †*P. kosticensis*, n. sp., p. 40, figg. 81 & 82, also pp. 11 & 36; from Cretaceous (Teplitz Horizon) of Bohemia: ZAHÁLKA (79).

†*Toulminia*, sp.; ROWE (55) p. 360.

†*Tremabolites-megastoma* Roem.; ZAHÁLKA (79) p. 36.

Extinct Families of DICTYONINA.

Family STAURODERMIDÆ.

- Family defined; ZITTEL (82), p. 58: list of genera; MINCHIN (47) p. 124.
 †*Casearia* Quenst., genus defined; ZITTEL (82) p. 59.
 †*Cyphelia* Z., genus defined, with figures of *C. rugosa* Goldf., and its skeletal structure; ZITTEL (82) p. 58, fig. 76.
 †*Eubrochus clausus* Soll.; JUKES-BROWNE & HILL (25) p. 480.
 †*Ophrystoma ocellatum* Seeley, synonym †*Ventriculites caravatus* Sollas; JUKES-BROWNE & HILL (25) p. 481.
 †*Placotrema cretaceum* Hinde; ROWE (55) p. 361.
 †*Poro spongeia* d'Orb., genus defined, with figures of *P. impressa* Goldf., and its skeleton; ZITTEL (82) p. 59, fig. 77.
 †*Stauroderma* Z., genus defined; ZITTEL (82) p. 59.

Family CALLODICTYONIDÆ.

- List of genera; MINCHIN (47) p. 124.
 †*Poroconchia simplex* T. Smith; ROWE (55) p. 360.
 †*Sklerokalia cunningtonii* Hinde; JUKES-BROWNE & HILL (25) p. 481.

Family CŒLOPTYCHIDÆ.

Definition of family and unique genus †*Cœloptychium*, with figures of *C. agaricoides* Goldf., and its skeleton; ZITTEL (82) p. 60, fig. 80.

Family VENTRICULITIDÆ.

- Family defined; ZITTEL (82) p. 59: list of genera; MINCHIN (47) p. 125.
 †*Cephalites*(?) sp.(?); ZAHÁLKA (79) p. 35. †*C. benettiae* Mant.; JUKES-BROWNE & HILL (25) p. 480: ROWE (55) pp. 360 & 361. †*C. capitatus* Smith; JUKES-BROWNE & HILL (25) p. 480. †*C. catenifer* Smith; ROWE (55) p. 361. †*C. compressus* Smith; JUKES-BROWNE & HILL (25) p. 480. †*C. longitudinalis* Smith; JUKES-BROWNE & HILL (25) p. 480: ROWE (55) pp. 360 & 361.
 †*Pachyteichisma* Z., genus defined, with figures of *P. carteri* Z., sponge and skeleton; ZITTEL (82) p. 59, fig. 78.
 †*Polyblastidium racemosum* T. Smith; ROWE (55) p. 360.
 †*Rhizopothorion*, sp.; ŽELÍZKO (80) p. 7. †*R. cernicone* Goldf.; ZAHÁLKA (78) pp. 28, 30, 31, 51, 92: ZAHÁLKA (79) pp. 44, 45, 48, 49.
 †*Ventriculites*, reconstructed; MINCHIN (47) p. 16, fig. 23: genus defined; ZITTEL (82) p. 60. *V.* sp.; ZAHÁLKA (78) pp. 27, 60, 92: ZAHÁLKA (79) p. 15. *V. angustatus* Roem.; ZAHÁLKA (78) pp. 27, 51, 56, 78, 92: ZAHÁLKA (79) pp. 13, 15, 17, 22, 23, 25–27, 29, 35, 43, 46. *V. cavatus* Soll., a synonym of *Ophrystoma ocellatum* Seeley; JUKES-BROWNE & HILL (25) p. 481. *V. convolutus* Hinde; *V. cribrosus* Phil.; *V. decurrens* Smith; *V. impressus* Smith; and *V. infundibuliformis* Woodw.: ROWE (55) p. 360. *V. mammillaris* Smith; JUKES-BROWNE & HILL (25) p. 481: ROWE (55) p. 360. *V. marginatus*; ZAHÁLKA (79) pp. 11 & 36. *V. odontostoma* Rss.; ZAHÁLKA (79) pp. 43–48. *V. (?) quinuncialis*(?) Smith; JUKES-BROWNE & HILL (25) p. 481. *V. radiatus* Mant.; ROWE (55) p. 360: ZAHÁLKA (78) pp. 28, 30, 51, 80, 92: ZAHÁLKA (79) pp. 13, 17, 24, 27, 29, 36, 43. *V. striatus* Smith, figured; ZITTEL (82) p. 60, fig. 79. *V. (?) texturatus*(?) Goldf.; JUKES-BROWNE & HILL (25) p. 481. *V. zippei*; ZAHÁLKA (79) pp. 13 & 36.

HEXACTINELLIDA INCERTÆ SEDIS (NOMINA NUDA).

"*Monorhaphis*, n. g. F. E. Schulze," figured; CHUN (8) p. 481.

"*Platylistrum plateasa*, n. g., n. sp.", figured; CHUN (8) p. 480.

D. DEMOSPONGIÆ.

Demospongiae, classification, with list of orders, families and genera; MINCHIN (47) pp. 145-154.

(i) TETRAXONIDA.

Diagnosis; MINCHIN (47) p. 146.

(a) Order CARNOSA.

Diagnosis; MINCHIN (47) p. 146.

Sub-order MICROTRIÆNOSA.

Diagnosis; MINCHIN (47) p. 146.

Dercitus Gray, the genus to be placed in the family *Ancorinidae* Z.; SCHRAMMEN (57) p. 9. +*D. primævus* Z., from Upper Senonian, re-described; SCHRAMMEN (57) p. 8, pl. ii, figg. 1-3. *D. simplex* Crtr., from Ternate, re-described; THIELE (68) pp. 20 & 21, pl. ii, fig. 1.

Sub-order MICROSCLEROPHORA.

Diagnosis; MINCHIN (47) p. 147: criticism of the application of the name [vide II, B (iv) (c)]; THIELE (68) p. 64.

Family CORTICIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 147.

Corticium candelabrum O. S., from Funafuti, 50-70 fathoms; KIRKPATRICK (28) p. 349.

Family PLAKINIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 147.

Orthorhachis problematica Solas, probably a species of *Placinocephala*; KIRKPATRICK (28) p. 350.

Placinastralla clathrata, n. sp., from Funafuti; KIRKPATRICK (28) pp. 350 & 351, pl. xiii, fig. 3, a-o.

Placinocephala spinosa, n. sp., from Funafuti, 50-70 fathoms; KIRKPATRICK (28) p. 350, pl. xiii, fig. 2, a-m.

Sub-order OLIGOSILICINA.

Diagnosis of sub-order; MINCHIN (47) p. 147: to be removed from the order Carnosa, as defined by Topsent, and placed as *Chondrosina*, a sub-family, including the genera *Chondrilla* and *Chondrosia*, allied to *Tethya*; THIELE (68) pp. 64 & 65. [Oligosilicina, sens. Keller, vide *Halichondrina*.]

Family CHONDROSIDEÆ.

List of genera; MINCHIN (47) p. 147.

Chondrilla, the genus derived from *Tethya* by loss of monaxona, p. 65;

C. distincta F. E. S., from Ternate, p. 67, pl. iii, fig. 20; *C. grandistellata*, n. sp., from Ternate, p. 65, pl. iii, fig. 18: THIELE (68). *C. mixta* F. E. S., from Funafuti; KIRKPATRICK (28) p. 349. *C. nucula* O. S., specimen wrongly identified by Kieschnick [(24) Zool. Rec. 1896]; it does not occur in the collection; THIELE (68) p. 56. *C. nuda* Lend., from Christmas Island; KIRKPATRICK (27) p. 130. *C. ternatensis*, n. sp., from Ternate; THIELE (68) pp. 65-67, pl. iii, fig. 19.

†*Chondrillopsis asterias*; ZAHLKA (78) p. 80, p. 92.

Chondrosia, the genus derived from *Chondrilla* by complete loss of spicules, p. 65; *C. corticata*, n. sp., from Ternate, pp. 67 & 68, pl. iii, fig. 21; *C. debilis*, n. sp., from Ternate, allied to *C. reniformis*, pp. 68 & 69: THIELE (68). *C. plebeja* O. S., and *C. reniformis* Ndo., from Christmas Island, general distribution given; KIRKPATRICK (27) pp. 129 & 130.

(b) Order TETRACTINELLIDA.

Diagnosis, as order; MINCHIN (47) p. 147: written *Tetractinellina*, as sub-order of order *Tetraxonida*; THIELE (68) p. 20.

(1) Sub-order CHORISTIDA.

Diagnosis of sub-order; MINCHIN (47) 147.

Tribe SIGMATOPHORA.

Diagnosis; MINCHIN (47) p. 147.

Family TETILLIDÆ.

Characters of family; KIESCHNICK (26) p. 555: diagnosis of family and list of genera; MINCHIN (47) p. 147.

Craniella cranium O. F. M., from Hudson Bay, 20-30 fathoms; LAMBE (30) p. 378 and (31) p. 26: distribution; LAMBE (32) p. 164. †*C. logani* Dawson, similarity of spicules to those of *C. cranium*; LAMBE (30) p. 278. *C. spinosa* Lambe, and *C. villosa* Lambe, distribution; LAMBE (32) p. 164.

Tetilla O. S., diagnosis and history of genus; KIESCHNICK (26) pp. 555 & 556. *T. amboinensis*, n. sp.; KIESCHNICK (26) pp. 556-558, pl. xlvi, figg. 1-7: identical with *T. bacca* Sel.; THIELE (68) p. 39. *T. australiensis* Carter, includes *T. ternatensis* Lindgren nec Kieschnick; THIELE (68) pp. 39 & 40. *T. bacca* Selenka, from Christmas Island; KIRKPATRICK (27) p. 132: includes *T. amboinensis* Kieschnick, *T. rubra* Kieschnick, *T. ternatensis* Kieschnick nec Lindgren, *T. merguiensis* Sollas, and *T. violacea* Kieschnick; THIELE (68) pp. 39 & 40. *T. rubra*, n. sp.; KIESCHNICK (26) pp. 560-562, pl. xlvi, figg. 23-29: identical with *T. bacca* Sel.; THIELE (68) p. 39. *T. schulzei*, n. sp.; KIESCHNICK (26) pp. 562 & 563, pl. xlvi, figg. 16-22. *T. ternatensis* Kieschnick, from Christmas Island; KIRKPATRICK (27) p. 132: a synonym of *T. bacca* Sel., but *T. ternatensis* Lindgren is a synonym of *T. australiensis* Carter; THIELE (68) pp. 39 & 40. *T. violacea*, n. sp., KIESCHNICK (26) pp. 559 & 560, pl. xlvi, figg. 8-15: identical with *T. bacca* Sel.; THIELE (68) p. 39.

Tribe ASTROPHORA.

Diagnosis; MINCHIN (47) p. 147.

Family THENEIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 147.
Thenea muricata Bwk., from East Greenland, 250 fathoms; LAMBE (31) pp. 26 & 27: complete distribution; LAMBE (32) p. 164: figured; MINCHIN (47) p. 17, fig. 24.

Family PACHASTRELLIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 147.
Characella sollasi Tops., figured; RICHARD (51) pl. ix, fig. 3.

Family STELETTIDÆ.

Diagnosis of family and of sub-families *Homasterina*, *Euasterina*, *Sanidasterina*, and *Rhabdasterina*, and list of genera; MINCHIN (47) p. 148; characters of the family; KIESCHNICK (26) p. 578.

Ancorina, vide etiam *Ecionema*: "A. aaptos" O. S., identical with *Tuberella tethyoides* Keller, hence name of the species *Tuberella aaptos*, q. v.; TOPSENT (70) pp. 286-288. *A. simplex* Lend. a synonym of *Ecionema bacilliferum*; KIRKPATRICK (27) p. 131.

Astrella tuberosa Tops., figured; RICHARD (51) pl. ix, fig. 4.

Ecionema Bwk., the name should be written *Ecionemia*: the application and affinities of the genus discussed, especially the question of its distinctness from *Ancorina*, pp. 28-30; *E. sp.* from Ternate, pp. 35 & 36, pl. ii, fig. 10; THIELE (68). *E. bacilliferum* Crtr., from Christmas Island, includes *Ancorina simplex* Lend.; KIRKPATRICK (27) p. 131. *E. cinerea*, n. sp., from Ternate, pp. 32-34, pl. ii, fig. 8; *E. cribrosa*, n. sp., from Ternate, perhaps = *Stelletta truncata* Kieschnick, pp. 31 & 32, pl. ii, fig. 7; *E. nigrescens*, n. sp., from Ternate, perhaps identical with *Stelletta lobata* Kieschnick, q. v., p. 31, and pp. 34 & 35, pl. ii, fig. 9; THIELE (68).

Penares Gray, application of the generic name discussed, pp. 21 & 22; *P. sollasi*, n. sp., from Ternate, pp. 22 & 23, pl. ii, fig. 2: THIELE (68).

Psammastra Soll., application and affinities of genus discussed, p. 37; *P. conulosa* Kieschnick, from Ternate; Kieschnick's diagnosis and description corrected and the sponge redescribed, pp. 36-39, pl. ii, figs. 11 & 12: THIELE (68).

Stelletta, diagnosis of genus; KIESCHNICK (26) pp. 550 & 578. *S. (Pilocrotha) brunnea*, n. sp., from Ternate; THIELE (68) pp. 24 & 25, pl. ii, fig. 3. *S. clavosa* Ridl., redescribed; KIESCHNICK (26) pp. 554 & 555. *S. (Myriastræ) debilis*, n. sp., from Ternate; THIELE (68) pp. 25 & 26, pl. ii, fig. 4. +*S. inclusa* Hinde; ROWE (55) p. 359. *S. lobata*, n. sp.; KIESCHNICK (26) pp. 550 & 551, pl. xlvi, figs. 30-37: perhaps identical with *Ecionemia nigrescens*; THIELE (68) p. 31. *S. reniformis*, n. sp.; KIESCHNICK (26) pp. 551-553, pl. xliv, fig. 1, pl. xlv, figs. 38-46. *S. simplicifurca* (Soll.), from Christmas Island; KIRKPATRICK (26) p. 131. *S. (Myriastræ) ternatensis*, n. sp., from Ternate; THIELE (68) pp. 26 & 27, pl. ii, fig. 5. *S. truncata*, n. sp.; KIESCHNICK (26) pp. 553 & 554: perhaps identical with *Ecionemia cribrosa*; THIELE (68) p. 31. *S. (Anthastræ) variohamata*, n. sp., from Ternate; THIELE (68) pp. 27 & 28, pl. ii, fig. 6.

+*Stolleya*, n. g. of *Ancorinidae*, diagnosis, p. 7; *S. microtulipa*, n. sp., p. 7, pl. iii, fig. 3; *S. ornatisima*, n. sp., p. 7, pl. i, fig. 4, pl. iii, fig. 5, from Upper Senonian: SCHRAMMEN (57).

+*Tethyopsis* Zittel non Stewart, a genus of *Ancorinidae* Z.; SCHRAMMEN (57), p. 9. *T. steinmanni* described from Upper Senonian; SCHRAMMEN (57) p. 8: figured, ZITTEL (62) p. 46, fig. 52.

Family GEODIDÆ.

Diagnosis of family, and of subfamilies *Erylina* and *Geodina*, with list of genera; MINCHIN (47) p. 148.

Cydonium mulleri Flem., distribution; LAMBE (32) p. 164. *C. sphaeroides* Kieschnick, is a *Geodia*; THIELE (68) p. 40.

Erylus inequalis Kieschnick [(24) Zool. Rec. 1896], the type specimen does not exist, and the name was given in error and becomes a *nomen nudum*; THIELE (68) pp. 47 & 48. *E. monticularis*, n. sp., from Funafuti; KIRKPATRICK (28) pp. 351 & 352, pl. xiv, fig. 3, a-h. *E. nobilis*, n. sp., from Ternate; THIELE (68) pp. 48 & 49, pl. ii, fig. 17.

Geodia berryi Sollas, = *G. cydonium*, var. *berryi* Lindgren, from Ternate; THIELE (68) p. 43. †*G. cretacea*, n. sp., from Upper Senonian; SCHRAMMEN (57) pp. 8 & 9, pl. iii, fig. 1. †*G. gigantea* Poč.; ZAHLÁKA (78) pp. 67, 77, 78, 92. *G. kükenthali*, n. sp., for a specimen from Ternate, identified by Kieschnick [(24) Zool. Rec. 1896] as *G. glariosum* Soll.; THIELE (68) pp. 43-45, pl. ii, fig. 15. *G. sphaeroides* for *Cydonium sphaeroides* Kieschnick, from Ternate; THIELE (68) pp. 41 & 42, pl. ii, fig. 14.

Sidonops seu *Sydonops* seu *Synops*; *S. alba* Kieschnick, from Ternate, distinct from *S. picteti* Tops., from Amboina, but probably identical with *S. picteti* Lindgren from Java, redescribed; THIELE (68) pp. 45-47, pl. ii, fig. 16. *S. picteti* Tops., from Christmas Island; KIRKPATRICK (27) p. 130.

Family PLACOSPONGIDÆ.

Characters of family; KIESCHNICK (26) p. 573: diagnosis and list of genera; MINCHIN (47) p. 148.

Placospongia Gray, diagnosis of genus, p. 573; *P. melobesioides* Gray, redescribed, p. 574, pl. xliv, fig. 2: KIESCHNICK (26). *P. mixta*, n. sp., for specimen from Ternate wrongly identified by Kieschnick [(24) Zool. Rec. 1896] as *P. melobesioides* Gray; THIELE (68) pp. 56, 72 & 73, pl. iii, fig. 25.

Family RAPHIDIDÆ.

Raphididae, n. f. of Tetractinellids for the genera *Ophiraphidites* and *Cephaloraphidites*; SCHRAMMEN (57) p. 9.

†*Cephaloraphidites*, n. g., diagnosis, p. 6; *C. cavernosus*, n. sp., pp. 6 & 7, pl. iii, fig. 4; *C. milleporatus*, n. sp., p. 6, pl. ii, fig. 4, from Upper Senonian: SCHRAMMEN (57).

†*Ophiraphidites* Crtr., diagnosis; SCHRAMMEN (57) p. 4. *O. anastomans* Hinde; ROWE (55) p. 359. *O. cylindricus*, n. sp., p. 5, pl. i, fig. 3, pl. iii, fig. 2; *O. infundibuliformis*, n. sp., p. 5, pl. i, fig. 1, pl. ii, fig. 6; *O. tuberosus*, n. sp., p. 5, pl. ii, fig. 5: SCHRAMMEN (57).

(2) LITHISTIDA.

Diagnosed as a suborder; MINCHIN (47) p. 148: as an order, divided into five suborders, *Tetracladina*, *Eutaxicladina*, *Anomocladina*, *Megamorina*, *Rhizomorina*; ZITTEL (82) pp. 46 & 47. *Lithistina* as suborder of order *Tetraxonida*; THIELE (68) pp. 20 & 49.

Tribe HOPLOPHORA.

Diagnosis; MINCHIN (47) p. 148.

Family TETRACLADIDÆ.

Diagnosed as a family; list of genera given; MINCHIN (47) p. 148.
Tetracladina, defined as a suborder; ZITTEL (82) p. 47.

†*Aulocopium*, genus defined; *A. aurantium* Oswald, figured: ZITTEL (82) p. 47.

†*Callopegma* Z., genus defined; *C. acaule* Z., the sponge and its skeleton figured: ZITTEL (82) p. 48.

Discodermia claviformis Kieschnick [(24) Zool. Rec. 1896]; doubts thrown on the validity of the species, pp. 49 & 50; *D. conica* Kieschnick, a *Theonella*, p. 50: THIELE (68).

†*Hallirhoa* Lamx., genus defined; ZITTEL (82) p. 49. *H. agariciformis* Benett, and *H. costata* Lam.; JUKES-BROWNE & HILL (25) pp. 68, 262, 264 & 480.

†*Jerea* Lamx., genus defined; *J. pyriformis* Lamx., and *J. quenstedti* Z., figured; ZITTEL (82) p. 49, figg. 57 & 58. *J. reticulata* Hinde, and *J. websteri* Low.; JUKES-BROWNE & HILL (25) pp. 68 & 480.

†*Kalpinella pateriformis* Hinde, and †*K. rugosa* Hinde; JUKES-BROWNE & HILL (25) p. 480.

†*Pholidocladia ramosa* Hinde; ROWE (55) p. 360.

†*Phymatella* sp., p. 27, and †*P. intumescens* (Roem.), pp. 29, 36; ZAHÁLKA (79). †*P. nodosa* Hinde; JUKES-BROWNE & HILL (25) p. 481. †*P. tuberosa* (Roem.); ZAHÁLKA (79) p. 36, figured; ZITTEL (82) p. 48, fig. 55.

†*Plinthosella compacta* Hinde, †*P. nodosa* Hinde, and †*P. squamosa* Z.; ROWE (55) p. 360. †*P. squamosa* Z.; ZAHÁLKA (79) pp. 15, 36 & 44: figured; ZITTEL (82) p. 49, fig. 59.

†*Polyjerea arbuscula* Hinde, and †*P. lobata* Hinde; JUKES-BROWNE & HILL (25) p. 481.

†*Rhagadinia* Z., genus defined; *R. rimosa* (Roem.), figured: ZITTEL (82) p. 49, fig. 60. *R. sulcata* Hinde; ROWE (55) p. 359.

†*Rhopalospongia gregaria* Benett, and †*R. obliqua* Hinde; JUKES-BROWNE & HILL (25) p. 481.

†*Siphonia* Park, genus defined; ZITTEL (82) p. 49. *S. geinitzi* Z.; ZAHÁLKA (78) pp. 31, 92. *S. königi* Mant.; ROWE (55) p. 359. *S. tulipa* Z., figured; ZITTEL (82) p. 56: JUKES-BROWNE & HILL (25) pp. 264 & 481.

†*Thecosiphonia craniata* Zah., pp. 26, 36, and †*T. ternata* (Rss.), pp. 26, 29, 36; ZAHÁLKA (79).

Theonella, genus characterized, p. 50; *T. conica* (Kieschnick) from Ternate redescribed, pp. 50–52, pl. iii, figg. 1 & 2; *T. incerta*, n. sp., from Ternate, perhaps identical with either *T. pratti* Bwk. or *T. ferruginea* H., p. 54, pl. iii, figg. 7 & 8; *T. swinhonis* Gray, from Ternate, pp. 52 & 53, pl. iii, figg. 3 & 4: THIELE (68).

†*Trachysycon nodorum* Hinde; JUKES-BROWNE & HILL (25) p. 481.

Family DESMANTHIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 149.

Family CORALLISTIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 149.

Family PLEROMIDÆ seu MEGAMORINIDÆ.

Diagnosis of family and list of genera: MINCHIN (47) p. 149: as suborder
Megamorina, defined; ZITTEL (82)

Family STREPTASTERIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 150: diagnosis of family, p. 280, list of genera comprised in it, p. 2; TOPSENT (70).

Holoxea Tops., application and character of genus; THIELE (68) p. 59: diagnosis of the genus; TOPSENT (70) p. 282. *H. collectrix*, n. sp., from Ternate; THIELE (68) pp. 60 & 61, pl. iii, fig. 15. *H. furtiva* Tops., full description, with distribution; TOPSENT (70) pp. 282-284, pl. viii, fig. 10. *H. valida*, n. sp., from Ternate; THIELE (68) pp. 59 & 60, pl. iii, fig. 14.

Spiroxya Tops., diagnosis of genus, p. 280; genus closely allied to *Rhaphidistia* Carter, p. 282; *S. heteroclita* Tops., full description, with synonymy and distribution, pp. 280-282, pl. viii, fig. 11: TOPSENT (70).

Family TETHYIDÆ.

Diagnosis and list of genera; MINCHIN (47) p. 150: diagnosis, p. 284, list of genera, p. 2, and affinities of the family, pp. 289 & 307; TOPSENT (70).

Aaptos adriatica Gray, vide etiam *Tuberella aaptos*.

Tethya Lam., diagnosis of genus; KIESCHNICK (26) p. 574: application of the name discussed; THIELE (68) p. 61: diagnosis of the genus; TOPSENT (70) p. 294. *T. affinis*, n. sp., from Christmas Island, allied to *T. japonica* Soll.; KIRKPATRICK (27) pp. 133 & 134, pl. xii, fig. 1, pl. xiii, figg. 3a-d. *T. corticata* Lend., distinct from *T. lyncurium*, but synonym of *T. japonica* Soll.; TOPSENT (70) p. 297. *T. ingalli* Bwk., from Christmas Island; KIRKPATRICK (27) p. 132: distinct from *T. lyncurium*, but identical with *T. cliftoni* Bwk., *T. robusta* Bwk., and probably also *T. seychellensis*, E. P. Wright, which become synonyms; TOPSENT (70) p. 296. *T. lyncurium* (L.) Lam., full description with synonymy and distribution; TOPSENT (70) pp. 294-312, pl. viii, figg. 8, 9, 14, 15. *T. cf. nux* Sel. from Samoa and Ternate; THIELE (70) pp. 62 & 63, pl. iii, figg. 16 & 17. *T. seychellensis* (E. P. Wright), redescribed; KIESCHNICK (26) pp. 574 & 575: from Christmas Island; KIRKPATRICK (27) p. 133: from Ternate, redescribed; THIELE (68) pp. 61 & 62; a synonym of *T. ingalli* Bwk.; TOPSENT (70) p. 296.

Tethyophena silifica O. S., a synonym of *Tuberella aaptos*; TOPSENT (70) p. 287.

Tuberella Keller, diagnosis, p. 284, type and unique species, *T. aaptos* (O. S.) Tops., redescribed, pp. 285-294, pl. viii, figg. 12 & 13; synonyms *T. ("Amorphina") duchassaingi* Tops., p. 287 and *T. tethyoides* Keller, pp. 3 & 287; *T. papillata* Keller is certainly a *Polymastia*, probably *P. mammillaris*: TOPSENT (70). [But from the list of synonyms given by the author it would appear that the correct designation of the species termed by him *Tuberella aaptos* should be *Aaptos aaptos*.]

Family STYLOCORDYLIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 150: list of genera; TOPSENT (70) p. 3.

Stylocordyla borealis (Lövén), distribution; LAMBE (32) p. 163: its claims to be included in the fauna of France; TOPSENT (70) p. 6. *+S. radix*; ZAHÁLKA (78) pp. 80, 93.

2. Sub-order CLAVULINA.

Diagnosis; MINCHIN (47) p. 151: *Clavulida*, diagnosis; TOPSENT (70) p. 24: regarded as one family, *Clavulidae*; THIELE (68) p. 56.

Family CLIONIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 151: diagnosis, p. 24, and list of genera, p. 2; TOPSENT (70).

Alectona Crtr., diagnosis of genus, p. 24, affinities of genus with *Thoosa*, *Dotona*, and *Cliona*, pp. 31 & 32: *A. millari* Crtr., redescribed from Banyuls, with full distribution, pp. 24-30, pl. i, figg. 1-3; TOPSENT (70): remarks on spiculation; LENDENFELD in review, p. 925.

Cliona Grant, diagnosis of genus, p. 32; *C. alderi* Hanc. and *C. angulata* Hanc., synonyms of *C. celata*, p. 53; *C. caribbea* Crtr. a synonym of *C. viridis*, p. 87; TOPSENT (70). *C. celata* Grant, systematic position, distribution, organisation, and mode of life; TOPSENT (69): full description, with synonymy and distribution; TOPSENT (70) pp. 32-55, pl. i, figg. 5, 6-9, pl. ii, fig. 1: GILSON (19) p. 33: general distribution; LAMBE (32) p. 164. *C. concharum* Thiele, a synonym of *C. vastifica*, p. 70; *C. corallinoides* Hanc., a synonym of *C. vastifica*, p. 68; TOPSENT (70). +*C. cretacea* Portl.; ROWE (55) p. 359. *C. dissimilis* R. & D., a synonym of *C. celata*; TOPSENT (70) p. 55. +*C. erodens* Dollf.; LERICHE (34) pp. 281 & 283. *C. euryphylla* Tops., redescribed and compared with other species, pp. 100 & 101, text-fig. 1 a-a"; *C. globulifera* Hanc., a synonym of *C. celata*, p. 54; *C. gorgonioides* Hanc., a synonym of *C. celata*, p. 53; *C. gracilis* Hanc., a synonym of *C. vastifica*, p. 68; *C. hironi* (Lend.), affinities discussed, shown to be closely allied to *C. celata* and to form with this species and with *C. vastifica* Hanc., *C. carpenteri* Hanc., *C. abyssorum* Crtr., and *C. stationis* Nassonow, a distinct section of the genus, pp. 44 & 68; *C. howsei* Hanc., a synonym of *C. lobata*, p. 76; *C. juliensi* Tops., redescribed and compared with other species, pp. 83 & 101, text-fig. 1, b-b'; *C. labyrinthica* Hanc., description, with distribution, pp. 102-104, pl. iii, fig. 7; *C. linearis* Soll., a synonym of *C. celata*, p. 43; *C. lobata* Hanc., full description, with synonymy and distribution, pp. 70-77, pl. ii, figg. 2 & 10, pl. iii, fig. 1, and pl. iv, fig. 1; *C. mazatlanensis* Hanc., synonym of *C. vastifica*, p. 68; TOPSENT (70). *C. mucronata* Sollas, from Funafuti; KIRKPATRICK (28) p. 352. *C. northumbrica* Hanc., synonym of *C. vastifica*; TOPSENT (70) p. 68. *C. orientalis*, n. sp., from Ternate; perhaps identical with *Suberites coronarius* Carter, from Mergui Archipelago, but not with *Suberites coronarius* Carter, from West Indies; THIELE (70) pp. 71 & 72, pl. iii, fig. 24. +*C.(ione)? [sic] ovalis* Frič; ZAHÁLKÝ (78) p. 93. *C. pruvoti*, n. sp., from Banyuls; TOPSENT (70) pp. 104-106, pl. iii, fig. 6. *C. purpurea* Hancock, type specimen re-examined, and to be placed in the new genus *Dyscliona*, q. v.; KIRKPATRICK (28) p. 353. *C. radiata* Hanc., probably not specifically distinct from *C. celata*; TOPSENT (70) p. 54. *C. schmidti* (R.), full description, with synonymy and distribution; TOPSENT (70) pp. 77-84, pl. ii, fig. 15 and pl. iii, fig. 5: from Funafuti, 25-45 fathoms; KIRKPATRICK (28) p. 352. *C. subulata* Soll., synonym of *C. viridis*; TOPSENT (70) p. 87. *C. sulphurea* (Desor) Leidy, synonym of *C. celata*; TOPSENT (70) pp. 32, 34, 55: recorded as common at Beaufort; WILSON (77) p. 350. *C. vastifica* Hanc., pp. 56-70, pl. ii, figg. 3-9; *C. vermicularis* Hanc., occurrence on French coast doubtful, p. 4; *C. viridis* (O. S.) Gray, pp. 84-98, pl. ii, figg. 11-14, pl. iii, figg. 2 & 3, pl. iv, fig. 2; *C. viridis* (O. S.) var. *carteri* (R.), full descriptions with synonymy and distribution, pp. 98-102, pl. iii, fig. 4; *C. warreni* Crtr., distinct from *C. celata* but identical with *C. quadrata* Hanc., p. 54; TOPSENT (70).

Cribrella labiata Keller, synonym of *Cliona viridis*; TOPSENT (70) p. 88.

Dotona Crtr., affinities of the genus and the unique species, *D. pulchella*, with *Alectona* and *Cliona*; TOPSENT (70) p. 31.

Dyscionia, n.g. of *Clionidae*; type species *D. davidi*, n.sp., from Funafuti 25–45 fathoms; to include also *Cliona purpurea* Hancock; KIRKPATRICK (28) pp. 352–354, pl. xiv, fig. 1, a–g.
Osculina polystomella O. S., synonym of *Cliona viridis*; TOPSENT (70) p. 87.

Papillella (*Papillina*) *quadrata* (Hanc.) Lend. and *P. suberea* (O. S.) synonymous of *Cliona celata* Grant, p. 34, pp. 39 & 40, and p. 55; *Papillina nigricans* O. S., synonym of *Cliona viridis*, p. 87; TOPSENT (70).

Raphyrus celatus Gray and *R. griffithsii* Bwk., both names denote merely the "raphyroid" stage of growth attained by *Cliona celata*, and therefore to be abolished, p. 49; *R. hixonii* Lend. to be *Cliona hixonii*, q.v., p. 41; TOPSENT (70).

Thoosa Hanc.; affinities of the genus with *Alectona*; *T. letellieri* a transitional type, p. 31; *T. hancocki* includes *Vioa ramosa* Lend., p. 88 footnote; TOPSENT (70).

Vioa granti O. S., probably identical with *Cliona vastifica* Hanc.; TOPSENT (70) p. 69. " *Vioa johnstonii* O. S."; type of genus *Jaspis* Gray, q. v.; THIELE (68) p. 58:=*Coppatias johnstoni*, q. v.; TOPSENT (70). *V. ramosa* Lendenfeld, a synonym of *Thoosa hancocki*, p. 88 footnote; *V. schmidti* Ridley non Carter= *Cliona schmidti*, p. 78; *V. typica* Graeffe, synonym of *Cliona viridis*, p. 88: TOPSENT (70).

Family SPIRASTRELLIDÆ.

Diagnosis of family and list of genera; MINCHIN (47) p. 151, diagnosis, p. 107, and list of genera comprised, p. 2; TOPSENT (70).

Hymedesmia Bwk., diagnosis and history of the genus, with criticism of species referred to it and belonging to it; genotype *H. stellata* Bwk., pp. 110–114; *H. acutostellata* Han. is a *Vibulinus* (*Axinellidae*), p. 114; *H. bistellata* (O. S.), Tops., full description, with synonymy and distribution, pp. 125–129, pl. iii, figg. 13 & 16; *H. hallezi* Tops., full description, with distribution, pp. 119 & 120, pl. iii, fig. 9; *H. hallezi*, var. *crassa*, n. var., from British Channel, French Coast, pp. 120 & 121, pl. iii, fig. 10; *H. indistincta* Bwk., a synonym of *Plocamia ambigua* (Bwk.) (*Pectiloscleridae*, *Bubarinæ*), pp. 112 & 113; *H. inflata* Bwk. is a *Pytheas* (*Pectiloscleridae*, *Ectyoninæ*), p. 113; *H. johnsoni* Bwk. is a *Hamacantha* (*Pectiloscleridae*, *Esperellinæ*), p. 113; *H. mixta* Tops., full description, with distribution, pp. 122 & 123, pl. iii, fig. 11; *H. occulta* Bwk. is a *Hymeraphia* (*Pectiloscleridae*, *Ectyoninæ*) p. 113; *H. pansa* Bwk. is a *Myxilla*, p. 113; *H. peachi* Bwk. is a *Hymeraphia* (*Pectiloscleridae*, *Ectyoninæ*), p. 113; *H. pilata* Bwk. and *H. pulchella* Bwk. belong to genus *Myxilla*, p. 113; *H. polita* Ridl. is an Ectyonine, probably a *Microciona*, p. 113; *H. radiata* Bwk. belongs to genus *Myxilla*, p. 111; *H. simplicissima* Bwk. is a *Suberites*, p. 113; *H. stellata* Bwk., full description, with synonymy and distribution, pp. 114–119, pl. iii, fig. 15; *H. tenuicula* Bwk. is a synonym of *Terpios fugax*, p. 113; *H. tristellata* Tops., full description, with distribution, pp. 129–131, pl. iii, fig. 14; *H. unistellata* Tops., full description, with distribution, pp. 123–125, pl. iii, fig. 12; *H. unistellata*, var. *chondrilloides*, from the Azores, p. 125; *H. zealandica* Bwk. belongs to genus *Leptosia* (*Pectiloscleridae*, *Dendorycinae*), p. 111: TOPSENT (70). For further notes on the spiculation of *H. bistellata* and *H. tristellata* see LENDENFELD in review, p. 925.

Latrunculia clavigera, n.sp., from Funafuti, 86 fathoms; KIRKPATRICK (28) pp. 354 & 355, pl. xiv, fig. 2, a–e.

Spirastrella O. S., diagnosis of genus, KIESCHNICK (26) p. 575; TOPSENT (70) p. 107. *S. bstellata* Lend. is distinct from *Hymedesmia bstellata* O. S., and perhaps is identical with *H. decumbens* Ridl.; TOPSENT (70) pp. 113 & 128. *S. cariosa* Tops., from Christmas Island; KIRKPATRICK (27) p. 134. *S. cunctatrix* O. S., figure of spiraster, and distribution; TOPSENT (70) pp. 8 & 101, text-fig. 1c, and p. 108. *S. cylindrica* Kieschnick [(24) Zool. Rec. 1896] identical with *S. vagabunda* Ridley; THIELE (68) pp. 56, 70, 71, pl. iii, fig. 23. *S. decumbens* Lendenfeld, from Adriatic, = *S. cunctatrix*; TOPSENT (70) p. 108. *S. decumbens* R. & D., var. *robusta*, n. var., from Christmas Island; KIRKPATRICK (27) pp. 134 & 135. *S. dilatata* Kieschnick [(24) Zool. Rec. 1896], identical with *S. spinispirulifera* Crtr.; THIELE (68) pp. 56, 69, 70, pl. iii, fig. 22. *S. lacunosa*, n. sp.; KIESCHNICK (26) p. 575. *S. minax* Tops., full description, with synonymy and distribution; TOPSENT (70) pp. 107-110, pl. iii, fig. 8. *S. semilunaria* Lindgren, a synonym of *S. decumbens*; KIRKPATRICK (27) p. 134. *S. spiculifera*, n. sp.; KIESCHNICK (26) p. 575.

Stelligera Gray, used by Lendenfeld for *Hymedesmia*, is a synonym of *Vibulinus* Gray (*Axinellidae*); TOPSENT (70) p. 112.

Timea Gray 1867 for *Hymedesmia stellata* Bwk., becomes synonym of *Hymedesmia*; TOPSENT (70) p. 112.

Family POLYMASTIDÆ.

Diagnosis of family; KIESCHNICK (26) p. 575: diagnosis and list of genera; MINCHIN (47) p. 151: diagnosis, p. 131, and list of genera, p. 2; TOPSENT (70).

Polymastia Bwk., diagnosis of genus; KIESCHNICK (26) p. 576; TOPSENT (70) p. 131. *P. affinis* Thiele, a synonym of *P. mammillaris*, pp. 135, 147; *P. bulbosa* Bwk., a synonym of *P. robusta*, p. 150; TOPSENT (70). *P. laganoidea* Lambe, distribution; LAMBE (32) p. 163. *P. mammillaris* (O. F. M.) Bwk., complete distribution; LAMBE (32) p. 162: recorded from Amboina; KIESCHNICK (26) p. 576: full description with synonymy and distribution; TOPSENT (70) pp. 131-147, pl. iv, figs. 8-13. *P. ornata* Bwk., a synonym of *P. robusta*; TOPSENT (70) pp. 150, 151. *P. robusta* Bwk., distribution; LAMBE (32) p. 163: full description, with synonymy and distribution; TOPSENT (70) pp. 147-157, pl. iv, figs. 3-7, 14. *P. spinula* Bwk., probably identical with *P. mammillaris*, p. 145; *P. uberrima* for *Rinalda uberrima* O. S., p. 152; TOPSENT (70).

Quasillina, diagnosis of genus, p. 157; *Q. brevis* (Bwk.) Norm., full description with synonymy and distribution, pp. 158-164, pl. vi, figs. 11 & 12; TOPSENT (70).

Rinalda arctica Merejk., synonym of *Polymastia mammillaris*, p. 136; *R. uberrima* O. S., a *Polymastia*, p. 152; TOPSENT (70).

Tentorium semisuberites O. S., from Davis Strait, 150 fathoms, and East Greenland, 250 fathoms; LAMBE (31) p. 25: general distribution; LAMBE (32) p. 163: figured; MINCHIN (47) p. 20, fig. 31.

Trichostemma hemisphericum M. Sars, distribution; LAMBE (32) p. 163: includes *Radiella sol*; TOPSENT (70) p. 136.

Family SUBERITIDÆ.

Diagnosis of family; KIESCHNICK (26) p. 576: diagnosis and list of genera; MINCHIN (47) p. 151: diagnosis, p. 164, and list of genera comprised, p. 2; TOPSENT (70).

Ficulina Gray, definition, p. 203: genotype *F. ficus* L., fully described

with synonymy and distribution, pp. 203-224, pl. v, figg. 6-15; TOPSENT (70) [vide etiam *Suberites ficus* and *S. suberea*].

Laxosuberites, new diagnosis of genus and statement of species referable to it, pp. 184 & 185; *L. ectyoninus*, n. sp., from Banyuls, pp. 189-192, pl. vii, figg. 11 & 12; *L. rugosus* (O. S.) Tops., full description, with synonymy and distribution, pp. 185-189, pl. v, figg. 1-4: TOPSENT (70) [vide etiam *Suberites capillitum*, *S. sericeus*, and *S. spongiosus*.]

Prosobrutes, diagnosis of genus, p. 174; *P. epiphytum* (Lam.) Tops.: full description, with synonymy and distribution, pp. 179-184, pl. vi, fig. 15; *P. longispina* Tops., full description, with distribution, pp. 174-177, pl. vi, fig. 14; *P. rugosus* Tops., full description, with distribution, pp. 177-179, pl. vi, fig. 13: TOPSENT (70).

Pseudosuberites, diagnosis of genus: TOPSENT (70) p. 165. *P. andrewsi*, n. sp., from Christmas Island; KIRKPATRICK (27) p. 135, pl. xii, figg. 2a-b, pl. xiii, fig. 7. *P. hyalinus* (R. & D.) Tops., full description, with synonymy and distribution, pp. 170-174, pl. vii, fig. 9; *P. sulphureus* (Bean) Tops., full description, with synonymy and distribution, pp. 165-170, pl. v, fig. 5 and pl. vii, fig. 10; TOPSENT (70).

Rhizaxinella, diagnosis of genus, p. 243; *R. clavigera* Keller, synonym of *R. pyrifera*, p. 245; *R. elongata* (R. & D.) Tops., full description, with synonymy and description, pp. 249-252, pl. viii, figg. 3-5; *R. pyrifera* (D. Ch.) Vosm., full description, with synonymy and distribution, pp. 243-249, pl. viii, figg. 6 & 7; TOPSENT (70).

Suberanthus flavus Lendenfeld non Lieberkühn, a synonym of *Pseudosuberites sulphureus*; TOPSENT (70) p. 170.

Suberites, diagnosis of genus, KIESCHNICK (26) p. 576; TOPSENT (70) p. 224. *S. alveus* Hansen, a species of doubtful value, perhaps identical with *Polymastia robusta*; TOPSENT (70) pp. 136 & 151. *S. capillitum* Tops., enters the genus *Laxosuberites*; TOPSENT (70) p. 184: figured; RICHARD (51) pl. ix, fig. 10. *S. carnosus* (Johnst.) Gray, full description, with synonymy and distribution, and of varieties *depressus*, *flavus*, *incrassata*, *ramosus* and *typicus*; TOPSENT (70) pp. 233-243, pl. vii, figg. 1-5. *S. concinnus* Lambe, distribution; LAMBE (32) p. 162. *S. conica* Hansen, a species of doubtful value, perhaps identical with *Polymastia mammillaris*; TOPSENT (70) p. 136. *S. coronarius* Carter, vide etiam *Ciona orientalis*. *S. domuncula* (Oliv.) Ndo, full description, with synonymy and distribution, pp. 225-233, pl. vi, figg. 1-9; *S. epiphytum* to be placed in genus *Prosobrutes*, pp. 3 & 181; TOPSENT (70). *S. ficus* (L.) Johnst., general distribution; LAMBE (32) p. 161, = type species of genus *Ficulina* Gray, q. v.; TOPSENT (70) pp. 3 & 203-217. *S. flavus* Liebk., a variety of *S. carnosus*; TOPSENT (70) p. 236. *S. hispidus* Bwk., distribution; LAMBE (32) p. 161. *S. incrassata* Hansen, a species of doubtful value; TOPSENT (70) p. 136. *S. mollis*, n. sp., KIESCHNICK (26) p. 576, pl. xliv, fig. 4. *S. montalbidus* Carter, from Hudson Bay etc.; LAMBE (30) p. 278 and (31) pp. 24 & 25: general distribution; LAMBE (32) p. 162: a synonym of *Ficulina ficus*, but *S. montalbidus* Lambe = *Ficulina lütkeni*, perhaps a variety of *F. ficus*; TOPSENT (70) pp. 206, 207, & 213. *S. montiniger* Crtr., distribution; LAMBE (32) p. 162. *S. oculatus* Kieschnick [(24) Zool. Rec. 1896] is a *Ciocalyptidae*, q. v.; THIELE (68) p. 75. *S. pacifica* Lambe, distribution; LAMBE (32) p. 162. *S. paludum* O. S., a synonym of *Laxosuberites rugosus*, pp. 8 & 185; *S. placenta* Thiele, a synonym of *Ficulina ficus*, p. 213; *S. radians* Hansen, a species of doubtful value, perhaps a *Trichostemma*, p. 136; TOPSENT (70). *S. radiata* Kieschnick [(24) Zool. Rec. 1896] a doubtful species; THIELE (70) p. 56. *S. sericeus* Thiele, referred to genus *Laxosuberites*; TOPSENT (70) p. 184. *S. simplex* Lambe, distribution; LAMBE (32) p. 162. *S. spissus* Tops.,

a synonym of *Tuberella aaptos*, p. 288; *S. spongiosus* O. S., referred to genus *Laxosuberites*, p. 184; TOPSENT (70). *S. suberea* Johnst., distribution; LAMBE (32) p. 161: a synonym of *Ficulina fucus*, var. *suberea*; TOPSENT (70) p. 211. *S. tenuiculus* Bwk., a synonym of *Terpios fugax* Duch. et Mich.; TOPSENT (70) p. 3. *S. wilsoni*, purple pigment studied; MACMUNN (45) pp. 337-342, 346 & 347.

Terpios, new diagnosis of genus, p. 192: its distinctness from *Suberites*, p. 196; *T. fugax* Duch. et Mich., full description, with synonymy and distribution, pp. 193-203, pl. vi, fig. 10; TOPSENT (70).

Family MESAPIDÆ.

Mesapidae, n. fam. of Clavulina for *Mesapos* Gray and *Tethyspira* Tops., diagnosis; TOPSENT (70) p. 252.

Mesapos Gray, diagnosis, p. 252, and affinities, p. 256; *M. stellifera* (Bwk.) Gray, full description, with synonymy and distribution, pp. 253-257, pl. vii, fig. 8: TOPSENT (70).

Tethyspira Tops., diagnosis; TOPSENT (70) p. 257: the genus should be referred to the *Ectyoninæ* (*Halichondrina*); LENDENFELD in review, p. 925. *T. spinosa* (Bwk.) Tops., full description, with synonymy and distribution; TOPSENT (70) pp. 257-265, pl. vii, fig. 7, and text-fig. 2, p. 262.

(b) Order HALICHONDRINA.

Diagnosis of order; MINCHIN (47) p. 151. Oligosilicina, sensu Keller, = Halichondrina, diagnosis and characters; KIESCHNICK (26) pp. 563 & 564.

Family HAPLOSCLERIDÆ.

Diagnosis of family and of sub-families *Chalininæ*, *Renierinæ*, *Spongilineæ*, *Gellioidinæ*, and *Phaeodictyinæ* with list of genera; MINCHIN (47) pp. 151 & 152.

Sub-family CHALININÆ.

Chalina Bwk., diagnosis of genus; KIESCHNICK (26) p. 567. *C. arbuscula*, recorded as common at Beaufort; WILSON (77) p. 350. *C. elastica*, n. sp.; KIESCHNICK (26) p. 567. *C. oculata* (Pallas), distribution; LAMBE (32) p. 155: figured; MINCHIN (47) p. 21, fig. 34.

Pachychalina conulosa, n. sp.; KIESCHNICK (26) p. 568, pl. xliv, fig. 8. *P. fibrosa*, R. & D.; KIRKPATRICK (28) p. 356.

Phyllophonia elastica, n. sp., pp. 566 & 567, pl. xliv, fig. 6: *P. erecta*, n. sp., p. 566; KIESCHNICK (26).

Siphochalina oculata L. [sic]; GILSON (19) p. 33.

Siphonochalina O. S., characters, p. 567; *S. fragilis*, n. sp., p. 567, pl. xliv, fig. 5; KIESCHNICK (26).

Toxochalina Ridl., diagnosis of genus; KIESCHNICK (26) p. 565. *T. borealis* Lambe, distribution; LAMBE (32) p. 155. *T. schulzei*, n. sp.; KIESCHNICK (26) p. 566, pl. xliv, fig. 7.

Sub-family RENIERINÆ.

Eumastia sitiens O. S., distribution; LAMBE (32) p. 154.

Gellius urcoferus Vosm., and *G. flagellifer* R. & D., distribution; LAMBE (32) p. 155. *G. laurentinus*, n. sp., from Gulf of St Lawrence, 100 fathoms, Strait of Belle Isle, 60 fathoms, Davis Strait, 130 fathoms; LAMBE (31) pp. 20 & 21, pl. i, figg. 1, 1a; LAMBE (32) p. 155. *G. sp. 1*,

nearest to *G. glacialis* and *G. flagellifer*, from near Gijón, Coast of Asturias, 260 meters; ORUETA (48).

Halichondria disparilis Lambe, distribution; LAMBE (32) p. 154. "*H. farinaria*" Bwk., a synonym of *Ficulina ficus*, var. *farinaria*; TOPSENT (70) p. 212. *H. panicea* Johnston, distribution; LAMBE (32) p. 154. *H. solida* R. & D., and *H. solida* var. *rugosa* R. & D., from Christmas Island; KIRKPATRICK (27) pp. 139 & 140.

Petrosia exigua, n. sp., from Christmas Island; KIRKPATRICK (27) p. 139, pl. xii, fig. 7, pl. xiii, fig. 4. *P. hispida* R. & D., distribution; LAMBE (32) p. 154.

Reniera cinerea Grant, distribution; LAMBE (32) p. 154. *R. innominata*, n. sp., from Christmas Island and Marie Louise Island, Amirante Group; KIRKPATRICK (27) pp. 138 & 139, pl. xii, figg. 6, 6a, pl. xiii, figg. 5a-b. *R. mollis* Lambe, from Labrador Coast, and near the entrance to the Baie des Chaleurs, etc.; LAMBE (31) p. 19; general distribution; LAMBE (30) p. 277 and (32) p. 155. *R. rufescens* Lambe, distribution; LAMBE (32) p. 154.

Sub-family SPONGILLINÆ.

Ephydatia blebbingia, n. sp., from the river Blebbing, Siamese Malay States, approaches *E. plumosa* Crtr. more closely than any other species; EVANS (15) pp. 72-81, pl. 1, and pl. 4. *E. fluvialis* Liebk.; LEVANDER (35) p. 3; STILES (67) p. 331; WELTNER (74) p. 522, pl. xlii, fig. 9. *E. mülleri* Liebk.; STENROOS (66) pp. 39, 84, & 233; ZSCHOKKE (83) p. 73. *Ephidatia* [sic] *mülleri* Lieb.; HEMPEL (21) p. lxii. *E. multidentata* (Weltn.), from Burnett River, Queensland: removed from genus *Tubella* and redescribed; WELTNER (74) pp. 519-523, pl. xlii, fig. A, and figg. 1-8.

Euspongilla; see *Spongilla*.

Heteromegenia macouni, n. sp., from Sable Island, in the Atlantic Ocean, 100 miles from Nova Scotia; MACKAY (44).

Lubomirskia baicalensis, something about it in Russian; ANON (2).

Spongilla seu *Euspongilla*; *S. fragilis* Leidy; STENROOS (66) pp. 39, 81, 84 & 233; WELTNER (74) p. 523; ZSCHOKKE (83) p. 73. *S. lacustris* auct., LEVANDER (36) p. 9; STENROOS (66) pp. 39, 81, 84 and 233; STILES (67) p. 331; ZSCHOKKE (83) p. 73. *S. lacustris* var. *lieberkühnii* Noll.; HEMPEL (21) p. lxii.

Spongillid, sp. incert., from Burnett River, Queensland; WELTNER (74) p. 523.

Tubella multidentata Weltn., to be placed in genus *Ephydatia*; WELTNER (74) p. 519.

Sub-family GELLIODINÆ.

Chondropsis ceratorus, n. sp., from Funafuti, 30 fathoms; KIRKPATRICK (28) pp. 355 & 356, pl. xv, fig. 3a-c.

Gellio(i)des Ridl., diagnosis of genus [placed amongst "Chalinidæ"], p. 565; *G. ramosa*, n. sp., p. 565, pl. xliv, fig. 3; KIESCHNICK (26).

Sub-family PHLEODICTYINÆ.

Rhizochalina pellucida R., p. 138; *R. sessilis*, n. sp., from Christmas Island, allied to *Pellina eusiphonia* R., p. 138, pl. xii, fig. 5, pl. xiii, fig. 8; KIRKPATRICK (27).

Family PÆCIOSCLERIDÆ.

Diagnosis of family and of sub-families *Esperellinae*, *Dendorycinæ*, *Ectyoninæ*, and *Bubarinæ*, with list of genera; MINCHIN (47) p. 152.

Sub-family ESPERELLINÆ.

Chondrocladia Wv. Th., characters of genus; KIESCHNICK (26) p. 571. *C. alaskensis* Lambe, distribution; LAMBE (32) p. 158. *C. dura* n. sp.; KIESCHNICK (26) p. 571. *C. pulchra* Lambe, distribution; LAMBE (32) p. 158. *C. ramosa*, n. sp., p. 571, pl. xliiv, fig. 11; *C. sessilia*, n. sp., pp. 571 & 572; KIESCHNICK (26).

Cladorhiza abyssicola Sars, distribution; LAMBE (32) p. 158. *C. cypresiformis* Fristedt non Carter, to be *Esperella fristedti*, nom. nov.; LAMBE (31) p. 21. *C. grandis* Verrill (syn. *C. nobilis* Fristedt), and *C. nordenstioeldii* Frist., distribution; LAMBE (32) p. 158.

Dermacella O. S., genus diagnosed; KIESCHNICK (26) p. 568. *D.* sp.; KIRKPATRICK (27) p. 137. *D. aberrans* Tops., figured; RICHARD (51) pl. ix, fig. 7. *D. fragilis*, n. sp.; KIESCHNICK (26) p. 568, pl. xlvi, figs. 53-56. *D. peachii*, var. *gracilis* Frist., and *D. pennata* Lambe, distribution; LAMBE (32) p. 156.

Dermacidon (*Homoeodictya*) *palmata* Johnst., distribution; LAMBE (32) p. 159.

Esperella adhaerens Lambe, distribution; LAMBE (32) p. 156. *E. fristedti*, nom. nov., for *Cladorhiza cypresiformis* Fristedt, non Carter, from Davis Strait, 100, 130 & 200 fathoms, and Siberian Arctic Ocean; LAMBE (31) pp. 21 & 22, pl. i, figg. 2, 2a-h; LAMBE (32) p. 157. *E. helios* (Frist.), *E. hispida* Lambe, and *E. lingua* Bwk., distribution; LAMBE (32) p. 156. *E. minuta*, n. sp., from Davis Strait, 200 fathoms; LAMBE (31) p. 23, pl. i, figg. 3, 3a-c; LAMBE (32) p. 157. *E. modesta* Lambe, *E. occidentalis* Lambe, and *E. serotinohamata* Crtr., distribution; LAMBE (32) p. 157.

Esperiopsis Carter, characters of the genus; KIESCHNICK (26) p. 572. *E. laxa* Lambe, *E. quatsinoensis* Lambe, *E. rigida* Lambe, and *E. vancouverensis* Lambe, distribution; LAMBE (32) pp. 157 & 158. *E. viridis*, n. sp.; KIESCHNICK (26) p. 572, pl. xliv, fig. 12, pl. xlvi, figs. 51 & 52.

Hamacantha johnsoni Gray, figured; RICHARD (51) pl. ix, fig. 9. [Vide etiam *Hymedesmia johnsoni*.]

Joyeuxia viridis Tops., figured; RICHARD (51) pl. ix, fig. 8.

Raphioderma affinis, n. sp., Great Britain; WALLER (72) p. 256, pl. 14.

Stylorella columella, see II, B, ii, d. *S.* sp. from Christmas Island, pp. 137 & 138; *S. irregularis*, n. sp., from Christmas Island, allied to *Petrosia contiguita* Thiele, p. 137, pl. xii, fig. 4, pl. xiii, figg. 6a-d; KIRKPATRICK (27).

Sub-family DENDORYCINÆ.

Iophon chelifer R. & D., from Gulf of St. Lawrence, 100 fathoms, and Davis Strait; LAMBE (31) pp. 23 & 24: general distribution; LAMBE (32) p. 159.

Iotrochota baculifera R., var. *tumescens*, n. var., from Christmas Island; KIRKPATRICK (27) pp. 136 & 137, pl. xiii, fig. 1: *I. magna* Lambe, distribution; LAMBE (32) p. 159.

Tedania fragilis Lambe, distribution; LAMBE (32) p. 155: *T. laevis*, n. sp., from Funafuti, 50-70 fathoms; KIRKPATRICK (28) p. 355, pl. xiv, fig. 4, a-e.

Sub-family ECTYONINÆ.

Agelas gracilis Whitelegge; KIRKPATRICK (28) p. 346.

Clathria delicata Lambe, *C. larvigata* Lambe, and *C. loveni* Frist., distribution; LAMBE (32) p. 160.

Echinodictyum Ridl., characters of genus, p. 570; *E. conulorum*, n. sp., pp. 570 & 571; *E. lacunosum*, n. sp., p. 570, pl. xliv, fig. 9; KIESCHNICK (26).

Hymeraphia spiniglobata Crtr., is a *Hymedesmia* (*Spirastrellidae*); TOPSENT (70) p. 113. [Vide etiam *Hymedesmia*.]

Lissomyxilla Hanitsch, genus not accepted; TOPSENT (70) p. 265.

Microciona dubia, n. sp., from Christmas Island; KIRKPATRICK (27) p. 136, pl. xii, figg. 3 & 3a, pl. xiii, figg. 2 a-f. *M. prolifera*, recorded as common at Beaufort; WILSON (77) p. 350.

Myzella amaknakensis Lambe; *M. barentsi* Vosm.; *M. behringensis* Lambe; *M. firma* Lambe; *M. incrustans* Johnst.; *M. lacunosa* Lambe; *M. parasitica* Lambe; and *M. rosacea* Lieb.: distribution; LAMBE (32) pp. 159 & 160.

Ophitaspongia seriatia Bwk., figured; MINCHIN (47) p. 20, fig. 32.

Plumohalichondria plumosa, see II, B, ii, d.

Raphidophlus Ehlers, diagnosis of genus, p. 569; *R. cylindricus*, n. sp., p. 569, pl. xliv, fig. 10; *R. ramosus*, n. sp., pp. 569 & 570, pl. xlvi, figg. 47-50; KIESCHNICK (26).

Stylostichon dendyi Tops., figured; RICHARD (51) pl. ix, fig. 6.

Sub-family BUBARINÆ.

Plocamia manaarensis Crtr., distribution; LAMBE (32) p. 161.

Family AXINELLIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 153.

Acanthella O. S., diagnosis; KIESCHNICK (26) p. 568. *A. acuta*, see II, B, ii, d. *A. costata*, n. sp.; KIESCHNICK (26) p. 568.

Axinella flustra Tops., figured; RICHARD (51) pl. ix, fig. 5. *A. rugosa* Bwk., distribution; LAMBE (32) p. 161. +*A. stylus* Hinde; JUKES-BROWNE & HILL (25) p. 480.

Ciocalypta, characters of genus (placed in the family "Clavulidae"), pp. 73 & 74; *C. fatida* D., p. 75, pl. iii, fig. 26; *C. oculata* Kieschn., p. 75, pl. iii, fig. 27; *C. sacciformis*, n. sp., p. 76, pl. iii, fig. 28; *C. simplex*, n. sp., p. 76, pl. iii, fig. 29; all from Ternate; THIELE (68).

Hymeniacidon conulosum Tops.; KIRKPATRICK (27) pp. 135 & 136. "H. foliatus" Bwk., distinct from *Suberites carnosus*, p. 243; "H. gelatinosa" Bwk. 1866, a synonym of *Terplos fugax* (Suberitidae), p. 196; *H. sanguinea* Bwk., a doubtful species, perhaps identical with *H. caruncula*, p. 261; "H. suberea" Bwk., a synonym of *Ficulina ficus*, pp. 209-211; "H. tenebrosus" Bwk., a synonym of *Ciona celata*, p. 54; "H. virgultosa" Johnst., a synonym of *Ficulina ficus*, var. *virgultosa*, p. 211; TOPSENT (70).

Leucophlaeus Carter, relations of the genus to *Ciocalypta*; THIELE (70) p. 74.

Phakellia dalli Lambe, distribution; LAMBE (32) p. 161. *P. ventilabrum* Johnst., from Davis Strait; LAMBE (31) p. 24: general distribution; LAMBE (30) p. 277 and (32) p. 161: figured; MINCHIN (47) p. 22, fig. 35.

MONAXONIDA INCERTÆ SEDIS.

Timacospongia Hinde, characters and occurrence; ZITTEL (82) p. 46.

(iii) *KERATOSA.*

Diagnosis; MINCHIN (47) p. 153.

(a) DICTYOCERATINA.

Dictyoceratina, nom. nov. for order *Monoceratina* Lendenfeld, with diagnosis; MINCHIN (47) p. 153.

Family SPONGIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 153: characters of family; SCHULZ (60) p. 530.

Cucospongia O. S., characters of genus, pp. 534 & 535; *C. amorphia* Pol., redescribed, pp. 536 & 537; SCHULZ (60). *C. dendroides*, vide etiam *Hircinia fusca*. *C. erecta*, n. sp., pp. 535 & 536, pl. xlivi, figg. 5-7; *C. oligoceras* Pol., redescribed, pp. 537 & 538: SCHULZ (60).*Carteriospongia* Hyatt, characters of genus, p. 532; *C. radiata* Hyatt (= *Phyllospongia pennatula* Ldf.), redescribed, pp. 532 & 533; *C. radiata*, var. *dulsiana* Hyatt, redescribed, pp. 533 & 534: SCHULZ (60).*Euspongia* sp. from Christmas Island; KIRKPATRICK (27) p. 128. *E. distans*, n. sp., pp. 531 & 532, pl. xlivi, figg. 1-4; *E. officinalis*, var. *adriatica* F. E. S., from Thursday Island and Amboina, pp. 530 & 531: SCHULZ (60).*Hircinia* Ndo., characters of genus; SCHULZ (60) p. 538: to be kept distinct from *Polyfibrospongia*; KIRKPATRICK (28) p. 358. *H. conulosa* Ldf. = *Oligoceras conulatum* R., redescribed, pp. 539 & 540; *H. fusca* Ldf. = *Cacospongia dendroides*, var. *dura* Pol., redescribed, pp. 538 & 539; *H. gigantea* Ldf. = *H. horrens* R., redescribed, pp. 540 & 541: SCHULZ (60).*Oligoceras conulorum*, vide etiam *Hircinia*.*Phyllospongia pennatula* Ldf., vide etiam *Carteriospongia radiata* Hyatt. *Polyfibrospongia* Bowerbank, genus diagnosed, p. 358; to be kept distinct from *Hircinia*, with two spp., *P. sweeti*, n. sp., and *P. flabellifera* Bwk.; *P. gigantea* and *P. fasciculata* to be put under *Hircinia*; *P. sweeti*, n. sp., from Funafuti, 86 fathoms, nearly related to *P. flabellifera* Bwk., p. 359, pl. xv, fig. 2, a-c: KIRKPATRICK (28).*Stelospongia cavernosa* Pallas, var. *pyriformis* Lend., from Funafuti; KIRKPATRICK (28) p. 358.

Family SPONGELIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 153: characters of family; SCHULZ (60) p. 541.

Poamopemma purpureum Crtr., from Funafuti, 50 fathoms; synonyms *Pseudoceratina durissima* Crtr., and *Holopamma fuliginosa* Crtr.; KIRKPATRICK (28) p. 358.*Spongelia*, characters of genus; SCHULZ (60) p. 542. *S. sp.*; KIRKPATRICK (27) p. 128. *S. pallidens frigilis*, var. *incrustans* F. E. S., redescribed; SCHULZ (60) pp. 542 & 543.†*Spongites*, n. g. of *Spongeliidae*, for *S. sellenbergi*, n. sp., from the Lower Cretaceous (Berrias-Stufe), not from the Middle Jurassic (Dogger), of the Bernese Oberland; ROTHPLETZ (52) pp. 154-157, and (53) pp. 388 & 389.

Family APLYSINIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 154.

Lufariella geometrica, n. sp., from Funafuti, 30 fathoms, nearly allied to *L. calyx* Lend., p. 357, pl. xv, fig. 1, a-c; *L. variabilis* Pol., from Funafuti, 25-30 fathoms, pp. 356 & 357: KIRKPATRICK (28).

(b) DENDROCERATINA.

Dendroceratina, nom. nov. for order *Hexaceratina* Lendenfeld pars, with diagnosis; MINCHIN (47) p. 154.

Family APLYSILLIDÆ.

Diagnosis of family, with list of genera; MINCHIN (47) p. 154.

(iv) MYXOSPONGIDA.

Diagnosis; MINCHIN (47) p. 154.

Family OSCARELLIDÆ.

Diagnosis of family, and list of genera; MINCHIN (47) p. 154.

Family HALISARCIDÆ.

Diagnosis of family, and list of genera; MINCHIN (47) p. 154.

E. OCTACTINELLIDA.

Diagnosis; MINCHIN (47) p. 156: order not accepted, the single genus *Astroespongia* regarded as an aberrant Hexactinellid; ZITTEL (82) p. 56.

†*Astroespongia* Roem., genus defined; *A. meniscus* Bumb., figured: ZITTEL (82) p. 56, fig. 72.

F. HETERACTINELLIDA.

Diagnosis, and list of genera; MINCHIN (47) p. 156: order not accepted, the genera regarded as aberrant Hexactinellids; ZITTEL (82) p. 56.

†*Asteractinella* Hinde, genus defined; *A. expansa*, spicule figured: ZITTEL (82) p. 56, fig. 71.

†*Tholiasterella* Hinde, genus defined; *T. gracilis* Hinde, spicules figured: ZITTEL (82) p. 56, fig. 70.

G. INCERTÆ SEDIS.

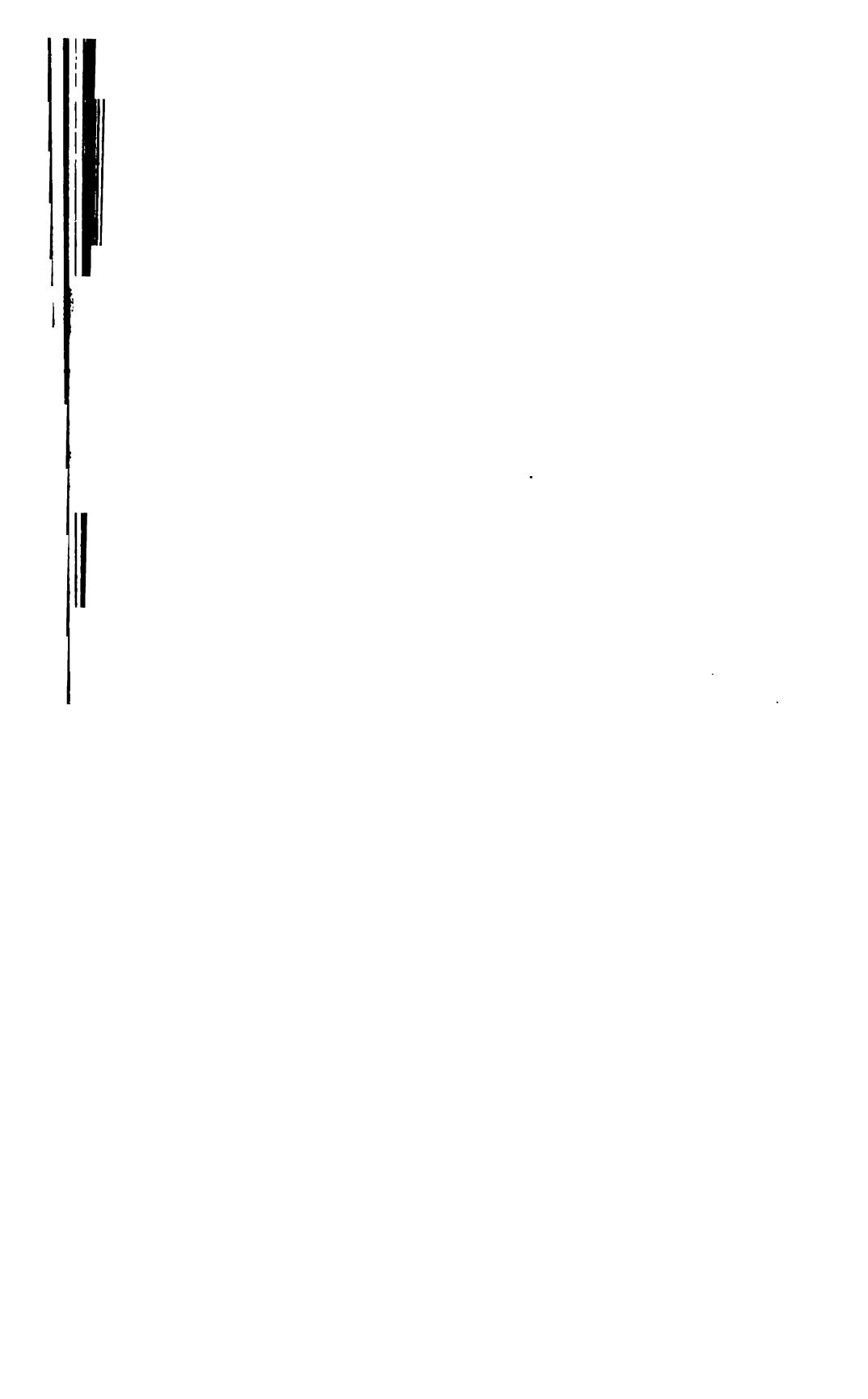
†*Achilleum rugosum* Roem.; ZAHÁLKA (78) pp. 13, 51, 92, 100: ZAHÁLKA (79) pp. 22, 27, 36.

†*Amorphospongia globosa* v. Hag.; ZAHÁLKA (79) pp. 9, 25, 27, 36, 44-48.
+*A. rugosa* Roem.; ZAHÁLKA (78) p. 28: ZAHÁLKA (79) pp. 17, 24, 25.

†*Cylindrites spongiosus* Goepf. [a sponge]; FUGGER (18) p. 393.

†*Ranifella (?) fucoida*, n. sp., from Saint Peter Sandstone; SARDESON (56) p. 78, pl. iv, figg. 5 & 6.

- +*Scyphia parvula* Russ.; ZAHÁLKA (79) p. 44.
+*Solidinodus poctae* Zah.; ZAHÁLKA (79) pp. 10-12, 15, 18, 21, 25, 27, 29, 36.
+*Spongia paradoxica*, from Red Chalk, is not a sponge; JUKES-BROWNE & HILL (25) p. 303.
+*Spongia saxonica* Gein.; FUGGER (18) p. 393. +*Spongites saxonicus* Gein.; ZAHÁLKA (78) pp. 30 & 92.
+*Stromatopora* [sic, as a sponge genus]; *S. sp.*, pp. 20, 21, 24, 29, 31; *S. mammillata* Nich., pp. 24 & 31; *S. ponderosus* Nich., p. 24: BOWNOCKER (5).
+“*Syringostroma columnaris* Nich.” [a sponge], pp. 27, 31; “*S. densa* Nich.” p. 33; BOWNOCKER (5).
+*Tragos globularis*; ZAHÁLKA (79) p. 13.



XVIII. PROTOZOA.

BY

ALBERT WM. BROWN, B.A., F.L.S.

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INTRODUCTION.

AFTER a steady decline for some years, the number of titles recorded this time shows a slight increase. The systematic literature consists principally of papers dealing with the *Foraminifera* and *Radiolaria* of which a large number of Fossil forms have been described. The most important work of the year has however been done on the *Sporozoa*. The researches of LAVERAN, MESNIL, and LÉGER have added considerably to our knowledge whilst the remarkable forms described by STOIC are worthy of close attention. SAND has published an exhaustive monograph on the *Tentaculifera*.

Recent discoveries on the Hæmatozoa, especially in relation to disease, have opened up a wide field for research of which many have taken advantage. The discoveries of the relation of the Hæmatozoa to Malarial fever afford a strong justification of the utility of Biological Science. Experiments now in progress with a view to stamping out the disease are being watched with great interest and it is probable that future years will see the pathological relations of Protozoa vigorously investigated.

I. TITLES.*

1. ALCOCK, A. W. A Summary of the Deep-sea Zoological Work of the Royal Marine Survey Ship "Investigator" from 1884-1897. Calcutta, 4to, pp. 49.
Reprinted from Mem. Med. Officers Army India, xi.
2. AMBERG, C. Arbeiten aus dem botanischen Museum des eidg. Polytechnikums. I. Beiträge zur Biologie des Katzensees. Vierteljahrsschr. Ges. Zurich 1900, pp. 59-136, pls. ii-vi.
3. [ANON.] Report of the *Malaria* Expedition to Sierra Leone. [Article on the Report.] Nature lxi, p. 614.
4. AURIVILLIUS, C. W. S. Animalisches Plankton aus dem Meere zwischen Jan Mayen, Spitzbergen, K. Karls Land und der Nordküste Norwegens. Svenska Ak. Handl. xxxii, No. 6, pp. 69.
5. BASILLI, A. Fecondazione ed immunità per il *Proteosoma* nel *Culex pipiens*. Rend. Acc. Lincei ix, Sem 2^o, pp. 362-364.
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10. BOSC, F. J. De la culture de parasites (Cancer, vaccine, clavelée, coccidie oviforme) dans le sang rendu incoagulable. C.R. Soc. Biol. 1900, pp. 1053-1055.
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12. *BUFFARD, M. & SCHNEIDER, G. La dourine et son parasite. La Semaine Med. 1900, No. 34.
[Abstr. in Centrbl. Bakter xxviii, p. 882.]
—. [See also SCHNEIDER & BUFFARD (143).]
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II. BIOLOGY.

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CORRIGENDA.

AVES, p. 35 line 17, delete the words "of life."

MOLLUSCA, p. 89 line 15 from bottom, for "*Ptychorhyncus*" read "*Ptychorynchus*."

CRUSTACEA. The following memoir was accidentally omitted and will be inserted next year. MALAQUIN, A. Nouvelles recherches sur l'évolution des monstrillides. C.R. Ac. Sci. cxxx, pp. 427-430.

INSECTA, p. 6 line 6 from bottom, instead of "*Lamellicorus* from Greenland," read "*Lamellicorns* from Grenada."

" p. 152 line 23, for "*Archapila*" read "*Arctapila*."

" p. 160 line 29, instead of "*Maphea*" read "*Maphoa*."

" p. 165: the heading "*Oedemeridæ*" and the line following it should follow the *Zonitis* entry.

" p. 239 line 11 from bottom, delete "subg. n."

" p. 318 line 1, instead of "*Pudacus*" read "*Padaeus*."

" p. 325 line 6 from bottom, delete "n. sp." at the end of the entry.

" p. 335 line 27, for "*websteriella*" substitute "*Websteriella*."

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